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EDITORIAL

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RAILWAY AGE

What Concerns a R. R. Man More—His Wage or His Job?

The present dispute over the proper level for railway wages forms a unique page in the history of industrial relations, because it is not at all a dispute between "capital" and "labor" over the division of the "profits" of the railroad business. Actually it is a struggle between a well-organized and intrenched minority of older (in seniority) railway employees against concessions which would enable the industry to provide jobs for its thousands of furloughed workers.

More Jobs, Not High Wages, the Real Need

Let no one be deluded into the belief that the *real threat* to the well-being of railway employees lies in their wage rates. Here is an industry which gave work to 1¾ million men in 1929, which had almost 1⅕ million employees last year and which now employs only a little more than 900 thousand. Even if the railways were seeking a 50 per cent reduction in wages, instead of 15 per cent only, such action would be far less harmful to railway labor than the wholesale dismissals which have already occurred. *There* is the real problem for legitimate union concern. Even if present wages were lower than in 1929 (actually, in purchasing power, they are 26 per cent higher), a labor unionism really concerned with alleviating the distress of its members would direct its attention to unemployment rather than to wage rates, because *present suffering of railway workers lies not in proposed reductions in wage rates but in the number who are unemployed.*

Now the leaders of the railway unions realize the truth of these observations just as thoroughly as we realize them. But it would be bad politics for them to admit it. It is the employees actually on the railway payrolls who have the votes and control the destiny of the unions. When an employee is furloughed—in most of the unions at least—he loses his voice in union affairs. Anyhow, the men who are furloughed are always the youngest in point of service and hence the weakest in authority in union counsels. Thus it is that a faction of selfish "old heads," who (probably with undue optimism) see their jobs safe even if the railway industry dwindles to next to nothing, is calling the turn and speaks in the sacred name of "Labor." And if you don't happen to agree with this faction of "old heads"—well that makes you an Economic Royalist, and a Deflationist and an enemy of our President and his recovery plans.

This wage dispute is first and foremost, then, a battle between those who demand high wage rates for a small number of workers, and the great mass of workers who say: "First give us our jobs back; and after that pay us as much as you can pay us without chasing away railway customers to the trucks."

This controversy is not a case where "capital" is trying to enlarge its "profits" at the expense of "labor." In the first place, capital invested in the railroads is not making any "profit" in the ordinarily accepted sense of the term (i.e., the share left for stockholders after the payment of debt obligations). Even if the proposed wage reduction were agreed to, "capital" still would not be making any "profit" in this sense. (The loss from conducting the railroad business in the first half of 1938 alone was 181 millions. At that rate of loss, the proposed 15 per cent wage decrease would barely serve to put the railroads "in the black"—to say nothing of any "profit.")

"Profits" Not An Issue

In any event, there could be no possible question of large earnings to "capital" involved, even if the roads were asking twice the reduction which they actually seek. The question is more fundamental than one of "profit." Actually it is: *Will the railroads be able to earn enough to attract the minimum of new capital which they will need to keep going?* It is not a generous wage nor even a "living" wage which is being sought for "capital"—but only a "subsistence" wage to keep it from dying out, and taking the railway industry with it to the grave.

Here again it is clear that the real conflict in this wage dispute lies between the inner clique of "old head" railroad employees, on the one hand, and the rank and file of all of them, on the other. The latter have a definite interest in seeing the railroads attract enough new capital, at least to keep the industry from shrinking. The "old head" coterie, however, says: "Let the railroads shrink. They won't shrink fast enough to get our jobs in our lifetime." They are probably mis-

taken in that belief—but many of them persist in holding it anyhow.

The charge, of course, has been recklessly made that the fundamental difficulty of the railways lies in excessive capitalization—and that "scaling down" railway capital structures would obviate the necessity for a wage reduction. Those who make this contention overlook two facts, which explode their argument, namely:

1. That the capital structures of more than one-third of the railway mileage of the country are already in process of being "written down."

2. That in the first eight months of the current year, railway companies operating 43,736 miles of line failed to earn enough even to pay bare operating expenses and taxes. The "capital structure" of these railroads could be "scaled down" to zero—and still the question of how to keep them in operation (and how to keep their employees working) would not be answered.

In this controversy "capital" is, at the very most, asking no more than a concession barely sufficient to maintain the service and the employing power of the railway industry. "Capital" has in the wage reduction proposal nothing to look forward to in the way of "profit." On the other hand, furloughed railway employees and other younger employees who still hold their jobs have every interest they own at stake in the outcome. A reasonable reduction in wage rates would sustain employment and promote its increase just as surely as a failure to reduce wages must lead to a shrinkage of the railroad industry and its job-giving power.

Employees Should Know Economics

The failure of many railway employees to understand this simple issue—or rather their failure to act against their union leaders in their own protection—is an indication of the power of the union propaganda machine—and its intimidation of dissenters. It bears equal witness to the utter inadequacy of the railways' machinery for providing their employees with an education in the elements of the economics of the transportation business—which ought to be a prerequisite to employment in the simplest occupation. Employees are protected against loan sharks, and against the enticements of vice, but no systematic effort is made in their behalf against the gravest danger of all—the corruption of their understanding.

Fortunately, there are evidences of a change in this direction. Some railroad executives are now stating the case of the railroad employee who wants to hold his job just about as competently as it could be stated. Commissioner Eastman has thrown out a few hints (for which brickbats from the union leaders have been his only thanks) which indicate that he, too, understands the true nature of the employee's problem. Probably nowhere has this approach been more adequately outlined than in the testimony of President Clement of the Pennsylvania before the "emergency board" last week (reported in *Railway Age*, October 8, page 511). Among other things, he said:

"The number of employees in the rail transportation field is lessening, and will continue to lessen when it should be increasing—unless wage and other questions are approached and disposed of from a common-sense standpoint and with due regard to the future as well as the present. The problem of the railroads is to reduce the cost of transportation to the consumer, so that the growth of rail transportation may resume. Labor is about 60 per cent of the whole cost, and the cost of transportation governs the competition."

Expressed in another way—if $300 a month for employees makes railroad service so expensive that patrons shift their traffic to the trucks, then the $300 wage "on paper" means nothing of value to railroad employees. Better take $250 a month and hold a job, than insist on $300 and have the job pulled off.

Continuing, Mr. Clement said: "It's not the wages in the railroad industry that should bother railroad employees; it's the wages they may be forced to take in other employment. What we are trying to do here is to determine how far these men should co-operate in an emergency to help themselves, to their own best interest in the end.

"When a bus takes to the highway, one man is sufficient to man the bus. When a truck takes to the highway, one man is sufficient to man the truck—sometimes two. When a single gas car takes to the railroad it is necessary, under the restrictions that surround rail transportation, to put three men on it. The railroads cannot afford to pay for three men where the highways pay for but one man. Therefore, the railroad's single car disappears; the highway takes the business; and all kinds of railroad labor has lost occupation.

"The very survival of railroad labor depends upon the willingness of railroad men to recognize that a factor in this competition is that railroad wages must adjust themselves to meet this situation; that competition means as much to labor as it does to the industry; and, unless that competition is met, these men will find themselves getting their livelihood in some other occupation."

"Let Them Eat Cake," Say Union Leaders

It is, in short, plain hyprocrisy to talk about "defending" the "common man" and the "working class," when what the unions are actually doing is keeping $300-a-month men in 30-hour-a-week jobs, at the price of the jobs of section hands and shop mechanics, and of trainmen and enginemen on "border line" runs which are not earning their keep. When the French underprivileged were crying for bread, Marie Antoinette is said to have suggested, "Let them eat cake." That is exactly the answer that the railway labor leaders and the "labor-loving" politicians are giving to the hundreds of thousands of railway unemployed today—offering these unfortunates the empty prize of high wage rates in jobs they cannot hold.

990-Ft. Welded Rail Lengths As Built-Up on the Racks Outside the Tunnel

Fighting Rail Corrosion in the 6.21-Mile Moffat Tunnel

By W. C. Jones

Chief Engineer, Denver & Salt Lake

This article describes an unusually serious problem of rail corrosion in the Moffat tunnel of the Denver & Salt Lake, and the continuous welding of new rail laid through this bore into 6.45-mile lengths to overcome the most aggravated condition which prevailed at the rail joints. It also discusses several unusual methods investigated by the road to overcome the cinder and sulphurous acid condition which prevails within the tunnel, to which the major part of the corrosion problem is attributed.

CONFRONTED with unusually serious corrosion of the rail and track fastenings in its Moffat tunnel, 6.21 miles long, due principally to the extreme moisture and sulphurous acid condition prevailing as the result of frequent train operation, the Denver & Salt Lake has been carrying out a wide range of experiments to develop means of minimizing the corrosion, and has recently laid continuously welded rail through the tunnel to preclude the more serious conditions which have prevailed at the rail joints. In the welding work, which was done by the Thermit-pressure method, rail lengths of 990 ft., built up on racks outside the tunnel, were dragged into the tunnel supported on ties employed as sleds on top of the old running rail and were then welded together to form continuous lengths 6.45 miles long, which are believed to be the longest continuous rails in the world.

In the studies which the road has been making of methods and means to minimize the deterioration of the ferrous material of the track structure, it has given consideration to all three of the factors which have entered into the problem—normal corrosion, acid attack and electrolysis. As will be pointed out briefly later in this article, it has made tests of numerous anti-corrosion coatings; has experimented with the cathodic (electrolytic bath) method of minimizing deterioration by electrolytic action; and is giving consideration to various methods of neutralizing the sulphurous acid condition prevalent in the tunnel as the result of moisture, locomotive gases and cinders.

Grades in Tunnel

Before discussing any of the means undertaken to offset the serious corrosion problem presented in the tunnel, it will be well to have a general picture of the unusual physical conditions involved in the tunnel and of the special conditions which bring about this problem.

The Thermit-Pressure Welding Equipment Arranged at Four Joints, Ready to Make the Welds

The tunnel, with its east end approximately 50 miles northwest of Denver, Colo., is a single-track bore, 6.21 miles long, which passes under the Continental divide, with a maximum overburden of 2,600 ft. While projected as early as 1886 and actually located in 1902 when the railroad was determining its final location, it was not until 1923 that construction was started. The tunnel was completed early in 1928 and was opened to traffic on February 26 of that year.

The tunnel track, at elevation 9197 at the east portal, rises on a 0.3 per cent grade westerly for a distance of 2.7 miles to a summit at elevation 9239. From this point the gradient is 0.9 per cent descending for 3.51 miles to the west portal, at elevation 9084, beyond which there is a 2 per cent descending grade to the west for a distance of approximately 9 miles.

Train movements average about 20 daily. Westbound trains, handling approximately 90 per cent empty cars, and therefore of relatively light tonnage, employ only one locomotive on the 0.3 per cent ascending grade to the summit, while eastbound traffic consists of trains loaded for the 1 per cent grade. The 2 per cent grade west of the tunnel requires the use of helper engine service for eastbound traffic, which is continued to the summit within the tunnel. Here the helper engines are cut off and are backed down to the bottom of the 2 per cent grade.

Causes of Corrosion

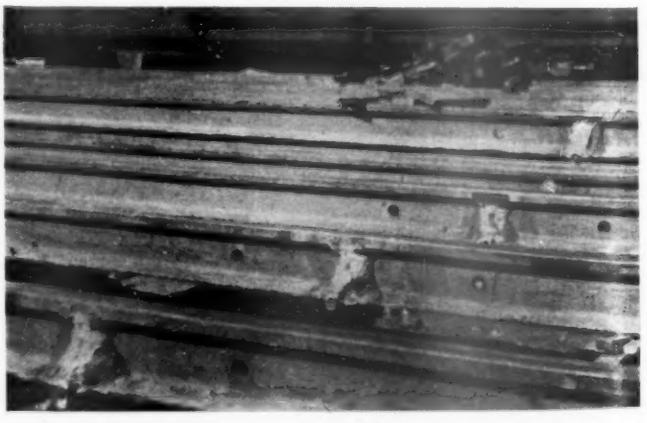
One of the large factors contributing to the corrosion problem within the tunnel has been the large quantity of cinders and gases expelled from the stacks of the locomotives working at capacity. Approximately two inches of cinders are deposited on the floor of the tunnel annually from the west portal to the summit, while east of that point, with the lighter grade and absence of helper service, only about one-half as much cinders are deposited. Altogether, this deposit of cinders amounts to approximately 1,600 cu. yd. annually.

Another of the important factors contributing to the corrosion within the tunnel is the condensation resulting from the contact of the air drawn in at the portals with the air of relatively high temperature within the tunnel, and also from the precipitation of moisture from the vapors and gases expelled from locomotives. The temperature at the portals varies from approximately 75 deg. above zero to approximately 45 deg. below zero, but the influence of this wide range of temperature extends only a limited distance within the tunnel. At the west end, due to the prevailing draft being eastward, assisted by electrically-operated fans with a combined capacity of 300,000 cu. ft. of air per minute, the temperature within the tunnel is affected for a distance of 1.5 miles in from the portal, while at the east end it is affected for a distance of only approximately 0.75 miles from the portal. Within the remaining four miles of the tunnel, the temperature remains practically constant throughout the year, around 60 deg. above zero, varying not more than 5 deg. when the ventilating fans at the east portal are in full operation, drawing in fresh outside air to expel locomotive smoke and gases.

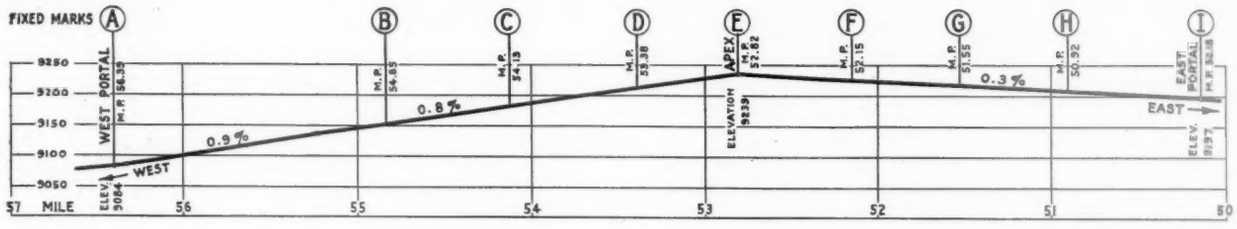
This combination of circumstances is largely responsible for much of the moisture within the tunnel. Whenever the temperature of the air drawn into and blown through the tunnel is different from the normal temperature within the tunnel, moisture condenses on the rail and track fastenings, the amount depending upon the relative temperatures involved and the moisture content of the incoming air. Furthermore, and of large importance, locomotives deposit a large volume of water from steam within the tunnel, it having been calculated that each locomotive expels by evaporation from 200 to 600 gal. of water into the atmosphere in passing through the tunnel. This moisture, together with the normal moisture of the air within the tunnel, intermixing with the locomotive stack gases, forms sulphurous acid, which, in suspension, is deposited in a thin film on the ball and web of the rail. At the same time this moisture, mixing with the cinders over the track area, produces additional sulphurous acid which attacks the base of the rail, the joint bars, the tie plates, and other track fastenings, both by straight chemical action and by stimulating electrolytic action.

The tunnel track was laid originally with 110-lb. rail in 60-ft. lengths, with joint bars and single-shoulder tie plates. The extent of the corrosion of this steel during the 10 years until it was replaced early in 1938, is seen in the fact that the rail and tie plates lost about 40 per cent of their original sections. Even more serious than the general loss of metal involved were the numerous rail failures at the joints, the result of excessive corrosion in the bolt hole areas and the impossibility of maintaining good joint conditions. As the result of this latter factor, rail-end batter was excessive within the tunnel, averaging 0.10 in. at the time the rail was replaced.

Corrosion about the bolt holes was most severe at those holes nearest the ends of the rails, starting from the perimeter on the upper and lower sides. As the corrosion progressed, stress corrosion cracks develop, and where breaks occurred they were generally on an angle of about 45 deg. with the base, extending backward from the base near the rail end, through the bolt hole and the rail head. While the excessive corrosion which occurred



A Close-Up of Four Completed Thermit Joint Welds, As the Rails Lay on the Rail Rack



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" 16	½	–	–	½	1¼	–	–	7/16	¾	–	–	1	1⅜	–	–	⅛	1½	–	–	7/16	1⅛	–	–	1½	–	¼	–	1⅛	–	⅛	–	¼	0	0	–	¼	+ 58°	+ 66°
" 18	3/16	–	–	¼	15/16	–	–	7/16	1	–	–	1⅛	1⅜	–	–	⅛	1¼	–	–	½	1⅛	–	–	1½	–	¼	–	1⅜	–	⅛	–	⅛	–	⅛	–	⅜	+ 64°	+ 64°
" 19	¼	–	–	¼	1	–	–	½	1	–	–	1	1¼	–	–	⅛	1½	–	–	¾	1⅛	–	–	1½	–	¼	–	1¼	–	¼	–	⅛	–	⅛	–	¼	+ 62°	+ 64°
" 20	⅜	–	–	½	⅜	–	–	⅜	1⅛	–	–	⅞	1⅜	–	–	⅞	1⅜	–	–	⅞					⅜	–	–	¾	⅛	–	0	0	–	⅛	0	0	+ 58°	+ 66°
" 21	5/16	–	–	¼	½	–	–	¼	15/16	–	–	⅞	1⅜	–	–	⅜	1½	–	–	15/16					⅜	–	–	¾	–	3/16	–	⅛	–	1/16	–	¼	+ 58°	+ 64°
" 22	3/16	–	–	½	½	–	–	⅜	5/16	–	–	1	1⅜	–	–	¼	1½	–	–	⅞					¼	–	–	⅞	0	0	0	0	0	0	–	¼	+ 60°	+ 64°
" 23	½	–	–	½	½	–	–	½	1	–	–	5/16	1¼	–	–	⅜	1⅜	–	–	1					⅜	–	–	½	0	0	0	0	–	⅛	–	¼	+ 60°	+ 62°
" 25	½	–	–	⅜	½	–	–	⅜	15/16	–	–	1	1¼	–	–	¼	1½	–	–	⅞					⅜	–	–	¾	0	0	–	⅛	–	⅛	–	⅜	+ 62°	+ 64°
" 26	0	0	–	5/16	⅞	–	–	⅞	1⅜	–	–	1⅜	1¼	–	–	⅞	1⅜	–	–	15/16					¼	–	–	⅜	3/16	–	–	⅛	–	⅛	–	⅜	+ 58°	+ 66°
" 27	¼	–	–	⅛	¼	–	–	7/16	15/16	–	–	1⅜	1⅜	–	–	½	1⅜	–	–	1⅛					¼	–	–	¾	¾	–	–	⅛	⅛	–	–	⅛	+ 62°	+ 64°
" 28	¼	–	–	¼	¼	–	–	¾	¾	–	–	1⅛	1¼	–	–	¾	1⅜	–	–	1½	–	½	–	1½	–	¼	–	1	¼	–	¼	–	0	0	0	0	+ 62°	+ 63°
" 29	½	–	–	⅛	¼	–	–	¾	½	–	–	1⅛	1¼	–	–	¾	1⅜	–	–	1½	–	½	–	1½	–	¼	–	1	¼	–	¼	–	0	0	0	0	+ 62°	+ 64°
" 30	¼	–	–	¼	¼	–	–	¾	5/8	–	–	1⅛	1¼	–	–	¾	1⅜	–	–	1½	–	½	–	1½	–	¼	–	1	¼	–	¼	–	0	0	0	0	+ 62°	+ 62°
August 1	–	¼	–	½	¼	–	–	¾	¾	–	–	1⅛	1¼	–	–	¾	1¼	–	–	1¼	–	½	–	1¼	½	–	–	½	¼	–	¼	–	0	0	0	0	+ 62°	+ 60°
" 2	–	½	–	¾	¼	–	0	0	1	–	–	1¼	1	–	–	½	1¼	–	–	1	–	¼	–	1	½	–	–	¾	0	0	0	0	¼	–	0	0	+ 64°	+ 64°
" 3	–	⅜	–	¼	0	0	–	½	½	–	–	1	1	–	–	½	1½	–	–	1	1	–	0	0	¾	–	–	1	0	0	0	0	¼	–	0	0	+64°	+ 62°
" 4	–	¼	–	1	0	0	–	½	¾	–	–	1	1	–	–	1	1½	–	–	¾	1	–	0	0	½	–	–	1	¼	–	¼	–	0	0	0	0	+ 62°	+ 62°
" 5	–	½	–	1	½	–	0	0	1	–	–	1¼	1½	–	–	¾	1⅜	–	–	1¼	0	0	0	0	½	–	–	½	¼	–	¼	–	0	0	0	0	+ 62°	+ 66°
" 6	–	½	–	¾	¼	–	–	¾	1	–	–	1¼	1¼	–	–	¾	1½	–	–	1	–	½	–	1½	½	–	–	½	0	0	0	0	0	0	0	0	+ 62°	+ 64°
" 8	–	¼	–	¾	0	0	–	½	1	–	–	1	1	–	–	1	1½	–	–	1	0	0	–	1	0	0	0	0	¼	–	0	0	0	0	0	0	+ 64°	+ 60°
" 9	–	½	–	½	0	0	–	¼	¾	–	–	1¼	1	–	–	1	1½	–	–	1	0	0	–	1	0	0	0	0	¼	–	0	0	0	0	0	0	+64°	+ 60°
" 10	–	¼	–	¼	0	0	–	¾	1	–	–	1½	1½	–	–	1	1	–	–	1	1	–	–	1	¼	–	–	½	¼	–	0	0	0	0	0	0	+ 64°	+ 60°
" 11	–	¼	–	¾	0	0	–	½	1¼	–	–	1½	1¾	–	–	1	1½	–	–	1	–	¾	–	1½	½	–	–	¾	0	0	–	½	¼	–	0	0	+ 64°	+ 64°
" 12	–	¼	–	½	0	0	–	½	1¼	–	–	1¼	1¼	–	–	1	1½	–	–	1	–	1	–	1¾	½	–	–	1	0	0	–	¼	0	0	0	0	+ 64°	+ 64°
" 13	–	¼	–	½	0	0	–	½	1⅜	–	–	1½	1½	–	–	1	1¾	–	–	2	1	–	–	2	½	–	–	1	0	0	–	½	0	0	0	0	+ 64°	+ 62°
" 15	0	0	–	¼	½	–	–	¾	1	–	–	1¼	1¾	–	–	½	1¾	–	–	2	½	–	–	1¼	½	–	–	¼	0	0	–	¼	0	0	0	0	+ 65°	+ 64°
" 16	0	0	–	¼	0	0	–	¾	1	–	–	1¼	¾	–	–	½	2	–	–	2¼	½	–	–	1¼	¾	–	–	¼	0	0	–	¼	0	0	0	0	+ 66°	+ 64°
" 17	0	0	0	0	0	0	–	¾	1	–	–	1¼	1	–	–	½	2¼	–	–	1¾	¾	–	–	1½	¾	–	–	¼	0	0	–	¼	0	0	0	0	+ 66°	+ 62°
" 18	0	0	0	0	¼	–	–	¾	1	–	–	1¼	1	–	–	¾	1¾	–	–	1½	1	–	–	2	1	–	–	¼	0	0	–	½	0	0	0	0	+ 64°	+ 64°
" 19	0	0	0	0	½	–	–	½	1	–	–	1½	1¼	–	–	¾	2	–	–	1½	1	–	–	2	½	–	–	¾	0	0	–	½	0	0	0	0	+ 64°	+ 62°
" 20	–	¼	–	½	½	–	–	½	1¼	–	–	1½	1½	–	–	1	2	1	–	–	1	–	–	1¾	½	–	–	¾	¼	–	–	½	0	0	0	0	+ 66°	+ 66°
" 22	0	0	–	½	½	–	–	¼	1¼	–	–	1½	¾	–	–	½	1½	–	–	2¼	1½	–	–	1½	1	–	–	¾	¼	–	–	½	0	0	0	0	+ 64°	+ 66°
" 23	0	0	–	½	0	0	–	¾	1	–	–	1½	¾	–	–	½	2	–	–	1¾	¾	–	–	1¼	½	–	–	1	0	0	–	¼	0	0	0	0	+ 66°	+ 62°
" 24	–	¼	0	0	0	0	–	¾	1	–	–	1½	1	–	–	¾	2¼	–	–	1½	1	–	–	1½	½	–	–	1	¼	–	0	0	0	0	0	0	+ 64°	+ 62°
" 25	0	0	0	0	0	0	–	¾	1	–	–	1¼	1½	–	–	¼	2	–	–	1¾	½	–	–	1¾	¾	–	–	1	0	0	–	¼	0	0	0	0	+ 66°	+ 62°
" 26	0	0	0	0	0	0	–	½	1	–	–	1¼	1½	–	–	¼	1¾	–	–	2	½	–	–	1	1	–	–	1	¼	–	–	½	0	0	0	0	+ 66°	+ 64°
" 27	0	0	–	¼	¼	–	–	½	1	–	–	1½	1½	–	–	¼	2¼	1	–	–	½	–	–	2	½	–	–	1	0	0	–	¼	0	0	0	0	+ 64°	+ 64°
" 29	0	0	0	0	¼	–	–	½	1	–	–	1½	1¼	–	–	¾	2	1	–	–	1	–	–	1¾	¾	–	–	¼	¼	–	–	½	0	0	0	0	+ 64°	+ 64°
" 30	0	0	0	0	½	–	–	¾	1¼	–	–	1½	¾	–	–	½	2	–	–	1½	¾	–	–	1	1	–	–	½	¼	–	–	½	0	0	0	0	+ 64°	+ 62°
" 31	0	0	–	½	0	0	–	¾	1	–	–	1¼	1½	–	–	½	2	–	–	1½	1	–	–	2	1	–	–	½	0	0	–	¼	0	0	0	0		+ 62°

Measurements of Movement of 6.45 Miles of Continuous Welded Rail in Moffat Tunnel, Three Months Period—June, July, August, 1938

here was undoubtedly responsible for the weakening of the rail, the severe impact resulting from the excessive joint batter prevailing contributed largely to the many breaks which occurred. It is significant that numerous microscopic examinations of the rail metal at breaks showed no defective metal in the rail itself which might have been responsible for the failures.

As a means of offsetting the particularly destructive effect of corrosion at the rail ends, the road, when recently considering the renewal of the tunnel rail, decided to replace it with continuously welded rail of 112-lb. R.E. section, made up of 66-ft. lengths joined by the Thermit-pressure weld process. Through this method of construction it expects not only to avoid further rail failures of the type described, but also to eliminate rail-end batter and joint maintenance, while at the same time increasing the service life of the rail, improving riding conditions and reducing wear and tear on locomotives and rolling stock.

In the welding of the new rails to be laid within the tunnel, the individual 66-ft. lengths were welded into 990-ft. strings outside the tunnel, and were then dragged into the tunnel. All of the field welding was done on a rack located along tangent track approximately 1,200 ft. east of the east portal. This rack, which was constructed of second-hand bridge stringers and rails, was approximately 1,000 ft. long, with its top surface about 1 ft. above the top of rail of the track, and its front face approximately 4 ft. back from the near running rail.

The new rail was unloaded from cars progressively along the rear side of the rack throughout its length, and lined up into strings for welding on that part of the rack towards the main line track. At first, space permitted the lining up of only two strings of rails at a time for welding, but later, with the reduction in the size of the storage piles of 66-ft. rails, as many as eight strings of rails were lined up at a time.

In all of the welding, the Thermit-pressure method was employed, this method having been selected because of its simplicity and the economical manner in which it could be adapted to the conditions imposed. The equipment and procedure incorporated the most recent developments in the Thermit-pressure method. During the actual welding work which proceeded progressively from one end of a string toward the other, from 28 to 38 welds were completed during a 10-hr. day.

Sledded Into Tunnel

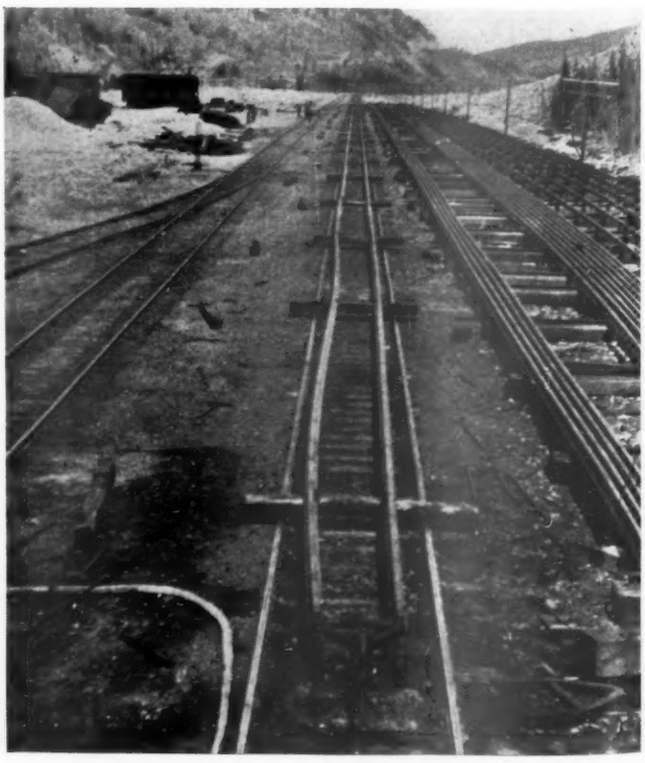
The sledding method of moving the long rail lengths into the tunnel proved not only relatively simple but highly effective. In carrying this out, two of the 990-ft. welded lengths were lined sidewise from the rack onto a series of second-hand white oak ties laid across the existing main track rails at intervals of approximately 40 ft. In position on the sled ties, spaced about 3 ft. apart, the individual strings were spiked at each tie, and, in addition, were secured at each tie by rail anti-creepers so that the rails and ties would move as a unit when being dragged into the tunnel.

Thus lined up, the pairs of long rails were pulled into the tunnel by a locomotive attached to their forward ends by means of a 1⅛-in. steel cable. The cable was secured to the rails by means of a spreader yoke, which was given a hold through the holes near the rail ends, provided initially for attaching the pressure clamps used in the welding process. The locomotive used in making all of the moves was a Mallet type (2-6-6-0), weighing 528,000 lb., and having a weight on the drivers of 332,000 lb. and traction of 76,400 lb.

In the different moves, the rails were dragged at a speed of approximately 10 m.p.h., the first of the lengths being pulled completely through the tunnel to the west end of the proposed continuous section of welded track. From this point, the individual moves were progressively shorter as the work continued through the tunnel to the east portal. In each successive move of two of the long lengths of rail, the sledding operation progressed until the forward ends reached a point approximately 1,100 ft. from the place where they were to be installed. Here, the rail anchors and spikes were left on the forward sled tie; the second sled tie was relieved of spikes and anchors and was chained to the rails of the running track; while all spikes and anchors were removed from the remaining sled ties.

With this arrangement, the locomotive pulled the welded lengths forward off the sled ties, dropping them into the center of the track as the move proceeded. The weld lugs at each joint skidded all of the ties together behind the second tie, massing them at this point, and then dragged across the tops of these ties as the rail was pulled forward. Little damage was done to these ties, which were used repeatedly in making the various moves, or to the crossties of the running track as the long lengths were dragged forward to the point of final installation.

In the method of sledding employed, a minimum of starts and stops were made by the locomotive, which naturally speeded up the work. Aside from the one stop required at the point where the rails were pulled from the sled ties, the only other stops involved were when the rail ends reached their final location where the yoke was uncoupled, and later, when the locomotive moved backward to a point where the bunched sled ties could be picked up and loaded onto a flat car coupled ahead of the locomotive, for their removel from the tunnel. Throughout the entire work, an average of 5,700 lin. ft. of rail was taken into the tunnel each 10-hr. working period, each of which periods afforded only about 7 actual working hours because of interference by



Two of the 990-Ft. Welded Lengths, Supported on Sled Ties at Intervals of About 40 Ft., Ready to be Dragged Into the Tunnel

train operation. The shortest haul was approximately 1,000 ft., while the maximum move was about 6.5 miles.

Laying the Rail

The actual laying of the 990-ft. lengths was done by a special rail laying organization, and involved little variation from the ordinary methods of carrying out such work. The old rail was lined out of the track; the old single-shoulder tie plates were removed; all spike holes were plugged with treated plugs; plate-cut ties were hand adzed to provide new level plate seats; new double-shoulder tie plates were placed; and then the 990-ft. lengths of rail were lined over into place and gaged, spiked and anchored. At the same time, specially drilled angle bars were applied temporarily to the joints between the successive long lengths, employing the welding clamp web hole in each rail end, until the lengths could be welded together. The making of the closure welds was done by the thermit-pressure method, in a manner similar to that used in making the other welds, except that metal inserts were employed between the abutting rail heads.

Where some slight longitudinal adjustment of the 990-ft. rail lengths was necessary in laying them, to bring abutting ends into proper position for welding, this was done with little difficulty by the track forces, using lining bars given purchase against other bars passed through the welding clamp holes in the webs of the rails at a number of the 66-ft. weld locations. In the anchoring of the rail, 10 Fair anti-creepers were applied per 66-ft. length against expansion or creepage down grade, and 6 such anchors were applied to each 66-ft. length against movement up grade. Numerous permanent markers were installed in order that any longitudinal movement of the rails may be detected, but in view of the relatively constant temperature throughout the main body of the tunnel and the secure anchorage afforded by the anti-creepers and the double-shoulder tie plates, no difficulty with longitudinal movement is expected. A detailed record of the rail movements during June, July and August, 1938, is given in the accompanying table.

The joint welding on the rail racks was carried out by a force of 18 men, including 2 welders, while the rail-laying force, which did all of the work from the distribution of the new materials to the picking up of all released materials, and the tamping of any swinging ties, consisted of 86 men. This latter force included 14 men assigned specifically to the handling of electric floodlights or strings of 75-watt incandescent lamps for illuminating the various laying operations.

As stated earlier in this article, in addition to the installation of continuously welded rails in the tunnel to help offset the effects of corrosion, the Denver & Salt Lake has been carrying out a wide range of experiments to develop means of minimizing the influences causing corrosion or electrolytic deterioration of the rail and fastenings within the tunnel. Its first experiments were with a large variety of anti-corrosion products or compounds, applied both under actual service conditions and in the well-equipped laboratory of the Denver & Rio Grande Western. These tests demonstrated conclusively that none of the materials employed would allay entirely the sulphurous acid corrosion of the rail and fastenings, and that in certain cases, after varying periods of application, they actually caused accelerated corrosion. This latter condition was brought about as the result of the acid becoming housed between the plastic protective coating and the steel. The tests also demonstrated that certain metal coatings are of little effect.

As a result of these tests, and the inherent difficulty of maintaining any effective anti-corrosion compound between the rail base and the tie plates, further consideration of surface treatments has been abandoned. In its stead, the cathodic method of protection (electrolytic bath) is being experimented with extensively in an effort to minimize at least that part of the corrosion resulting from electrolytic action. This method offers protection only where current enters the metal, and in its application to the rail would require that an electric current be passed through the rail; that a ground wire be run under each rail, as nearly parallel with it as possible; and that the rail base be surrounded by a conductor. There is a possibility that the damp cinders built up around the base of the rail will provide this conductor, but it is recognized that the periodic removal of the cinders will destroy this necessary element of the method. In any event, tests will be made to determine the protection offered by the method where the rail base is surrounded by cinders. Tests of the cathodic method already conducted within the tunnel with small pieces of angle bar and strap iron have demonstrated that corrosion may be retarded as much as 30 per cent, and indicate that even greater protection may be possible in the case of the track rail.

Neutralize Acid

Since the major cause of corrosion within the tunnel is the sulphurous acid generated as the result of the combustion of locomotive coal, it is felt that if this acid can be neutralized, corrosion will be reduced materially. Working on this theory, consideration is being given to impregnating the locomotive gases with a neutralizing agent such as lime. We now believe that the most feasible method of doing this would be to equip each engine operating through the tunnel with a small feeder filled with lime of the proper strength, which can be turned on about a half mile before the tunnel is reached, feeding the lime gradually into the stack until the tunnel is passed. Such an arrangement, we believe, will result in neutralizing the corrosive elements in the stack gases and will thus afford protection to the rail and fastenings.

Another possible aid being considered to minimize corrosion is the use of a continuous blow-off from locomotive boilers, directed against the rails. All engines carry about 15 grains of alkalinity per gallon in their boiler water. It is felt that a small stream of this water played on the rails will, over a long period, deposit a sufficient amount of alkaline material over their surface to neutralize any acid coming in contact with it.

Consideration is also being given to the installation of a small turbine-driven electric generator on the side of each locomotive operated through the tunnel, the current generated to be stepped up through a transformer and a synchronized rotary gap, and then discharged through electrodes suspended in the locomotive stack, in the presence of the stack cinders as exhausted. The idea behind this scheme is that under the action of the electric charge, the cinders will be precipitated on the inside of the stack or in adjacent containers provided until the engine has passed through the tunnel, after which they will be expelled into the air by the velocity of the smoke and gases in the stack.

The efforts to overcome the corrosion problem within the Moffat tunnel have been advocated and planned by the author, assisted in all testing work by Ray McBrian and associates, testing engineers for the D. & R. G. W. The rail welding described was carried out by section forces under the supervision of representatives of the Metal & Thermit Corporation, while the installation of the continuous rail was made by company forces under the direction of G. S. Turner, engineer maintenance of way of the Denver & Salt Lake.

Emergency Board Hearings

Labor's presentation well under way, but "overcapitalization" melodrama is banned

WASHINGTON, D. C.

RAILWAY labor's presentation in opposition to the 15 per cent wage cut got under way at the October 8 session of the Washington, D. C., hearings before the three-man Emergency Board appointed by President Roosevelt to investigate the controversy. The union witnesses were expected to complete their testimony by the end of this week, thus leaving next Monday, the final hearing day, for oral arguments.

Members of the Emergency Board, which is required to make its report to the President by October 27, are: Chairman—Walter P. Stacy, chief justice of the Supreme Court of North Carolina; H. A. Millis, retired chairman of the University of Chicago's department of economics; and James M. Landis, dean of Harvard Law School. The railroad presentation, which is under the direction of J. Carter Fort, general solicitor of the Association of American Railroads, was completed on October 7, except for what rebuttal testimony may be offered. The bulk of the time allotted to the labor side will be taken for the testimony of witnesses offered by Judge Charles M. Hay of St. Louis, Mo., counsel for the 18 organizations making a joint presentation under the auspices of the Railway Labor Executives' Association; although Tom Davis of Minneapolis, Minn., counsel for the non-affiliated Brotherhood of Railroad Trainmen, was expected to offer separate evidence on behalf of that organization.

Lauck's Grandstand Exhibits Ruled Out

R. L. E. A.'s plans to make "overcapitalization" a major issue in the proceeding received a set-back when its star witness in this connection—Economist W. Jett Lauck of Washington, D. C.—was prevented from introducing a series of exhibits designed to show the "excess of capitalization of representative railroads as a result of stock bonuses and dividends paid thereon." Judge Stacy sustained Mr. Fort's objections to the offering of the witness' conclusions, unsupported by citations of authoritative sources. As the chairman put it, the proposed testimony "doesn't have any weight—it is only the witness' interpretation of instruments somewhere else." The upshot was that the board ruled out some 35 Lauck exhibits which had been marked for identification, and Judge Hay turned his direct examination to an exhibit presenting data on railroad dividend payments. "Now, we're getting down to facts," was Chairman Stacy's observation.

Railroad testimony subsequent to that reported in the *Railway Age* of October 8 was offered by F. E. Williamson, president of the New York Central; H. A. Scandrett, one of the trustees of the Chicago, Milwaukee, St. Paul & Pacific; Hale Holden, chairman of the Southern Pacific; E. E. Norris, president of the Southern; Charles Donnelly, president of the Northern Pacific; and H. A. Enochs, chairman of the Carriers' Joint Conference Committee. Also, J. Elmer Monroe, statistician for the Bureau of Railway Economics, returned to the stand to present additional testimony on questions raised during his previous appearance and to offer exhibits on average earnings by various classes of employees; while General Solicitor W. T. Faricy of the Chicago & North Western, who had conducted the direct examinations of Messrs. Scandrett and Donnelly, made a statement for the record on the differences between a proceeding under section 77 of the bankruptcy act and an equity receivership. It was his view that the differences were not pertinent to the wage proceeding.

"A wage scale beyond the capacity of the railroad industry to bear is a most serious disservice to the men themselves," Mr. Williamson asserted. "The less prosperous the railroad business, the fewer the men who can be employed and the larger the number of men who must either be furloughed or permanently let out. Higher wage rates that carry with them a higher percentage of unemployment are as bad for the men as for the railroads. In these circumstances, wage rates that are higher than ever before in railroad history simply cannot be sustained, and the traffic cannot support them."

With gross railway operating revenues of $187,000,000 in this year's first eight months, Mr. Williamson pointed out, N. Y. C. net railway operating income available for fixed charges, amounted to only $3,387,000. "Even this meager income," he added, "was attained only by strictest economy and the suspension of all maintenance and repair work not necessary for service and safety requirements. As a consequence, many men had to be laid off, with total employment reduced from an average of 101,000 for the year 1937 to only 82,000."

The total direct obligations of the New York Central System outstanding, Mr. Williamson went on, including funded debt and capital stock of leased lines upon which the Central is obligated to pay a return, is $1,028,000,000. This amount, he added, is $875,000,000 less than the estimate of value, after depreciation, placed by the Interstate Commerce Commission upon the carrier property alone of the New York Central System, without counting such valuable non-carrier investments as the extensive real estate developments in the Grand Central terminal area in New York.

"With such a property as the New York Central just barely earning operating expenses and taxes, with practically nothing to apply toward fixed charges and nothing whatever for a return on capital stock," Mr. Williamson said, "it is idle to talk about excessive capitalization. The more than 60,000 stockholders of the New York Central, the overwhelming majority of whom own comparatively few shares each, have received no dividends on their stock in more than six years.

"It is difficult to understand on what theory railroads can be expected to maintain sufficient credit to attract investors if there exists any widespread attitude that railroad security owners are not entitled to a reasonable return on their money."

Hay Tries a Fast One

During the cross-examination of Mr. Williamson, Judge Hay read extracts from what he first said was a decision of the Interstate Commerce Commission in a

1910 rate case wherein a New York Central stock dividend of 1869 was made an issue. Mr. Williamson had previously pointed out that the United States Supreme Court had passed upon the transaction, which, he explained, was the only way the New York Central, limited at the time to a 10 per cent dividend, could pass on to stockholders a return on earnings which had been plowed back into the property. The above-mentioned extracts read by Judge Hay assailed the transaction, but they were later identified as merely testimony or a brief in the 1910 rate case—Judge Hay explained that a research associate who handed him the material had been mistaken as to its being from an I. C. C. decision.

In moving that Judge Hay's readings be stricken from the record, Mr. Fort went on to suggest that the R. L. E. A. counsel's "prompters be more careful." Judge Hay replied with an expression of regret that the material, which he withdrew, was mistakenly put forth as being from an I. C. C. decision; but he would not withdraw the contention of overcapitalization. "That is just the type of proof we expected to get on overcapitalization," said Mr. Fort.

Among B. of R. T. Counsel Davis' questions on the "ability-to-pay" basis of fixing wages, there came a reference to Mr. Williamson's salary; and the witness said that he would be perfectly willing to work on a "board and lodging" basis if it would save the company he was working for. He later told Dean Landis that salaries of New York Central officers had been cut throughout the depression years; all cuts, except those of the president who took a 40 per cent reduction, were restored by January 1, 1937. In response to further questioning from Mr. Landis, Mr. Williamson said that he would not contend that the amounts railroads pay in pension and unemployment insurance taxes should be a consideration in fixing wages.

Also, he told the same questioner that if the N. Y. C. had money to purchase materials it could put men to work. "The door of our purchasing office has been practically closed for six months," he said; although he did concede that the final determination as to whether a railroad can use more men is set by the volume of traffic. Explaining how the railroads arrived at the 15 per cent figure as the measure of the proposed cut, Mr. Williamson said that he thought the committee was influenced by the fact that such a reduction would still leave the men better off than they were in 1932; yet the railroad situation in January, 1938, was much more critical than in '32. Meanwhile the witness had told Judge Hay that he thought the bondholders were entitled to the "modest rental" paid them in the form of interest for the property that "gives us all a job."

Roads in Worst Crisis—Wages at Peak

From the observation that "no one enjoys having his pay reduced," Mr. Scandrett went on to assert that "an outstanding undisputed fact in this entire controversy is that, at a time when the financial condition of the industry is the worst in railroad history, the wage scale is the highest in railroad history. A wage reduction of 15 per cent, in view of the reduction in the cost of living, will still leave the railroad worker better off in terms of purchasing power than he was in 1929, when railroad operating revenues were more than 74 per cent higher than they are now."

Discussing the railroad lines which carry only a light traffic, Mr. Scandrett said that "the Milwaukee Road, in common with most Western railroads, has a very substantial mileage of light density secondary and branch lines. These lines provide a very useful service to the communities located on them, and to the agricultural territory tributary to them. In recent years many of these lines have become a substantial burden and we have been under the necessity, much to our regret, of asking authority to abandon them."

"I believe in good wages and I believe in an increased standard of living," Mr. Scandrett said. "I am a fellow worker with the men and I consider myself their representative, but I cannot forget that I am also the representative of that great body of men and women who have invested their savings in the securities of the Milwaukee Road. It is 21 long years since the stockholders of this company have received a single penny in dividends. All of our mortgages are in default, and it is eight years since we earned the full interest on our debt.

"Bondholders and stockholders are not the same individuals from year to year. Their holdings change as financial circumstances compel them to sell, or as they become discouraged and sell to avoid what they feel will be further losses. Many of those who have sold have had to take large losses and those who still hang on have suffered a heavy depreciation in market value. It is both inaccurate and misleading to say, as is often said, that the railroad bondholders have not taken their loss. On the Milwaukee Road and on many other railroads similarly situated, they have already taken huge losses, both in failure to receive interest, and in drastic decline in market value.

"This showing cannot be brushed aside with the statement that the Milwaukee is a bankrupt property, and so should not be considered. The difficulty of the Milwaukee Road in recent years is the same difficulty from which the entire railroad industry has suffered—the narrowing spread between revenues and expenses. The result of this proceeding may well have a most important influence on the future of the railroad industry in this country. In the equity and bankruptcy courts are railroads whose mileage aggregates 30 per cent of all Class I railroad mileage of the United States. Struggling on the brink of bankruptcy are many thousands more miles. All are headed in the same direction. This procession should be headed in the opposite direction—and it can be done. The only way it can be done is to avail ourselves of every possible opportunity to improve the financial condition of the industry.

Wage Cut Won't End Search for Lower Costs

"We cannot afford to overlook any major, or even any minor, factor in the present situation. This proceeding deals with a major factor because wages constitute the largest single item of railroad cost. The search for ways of improving operating results did not begin with wages, nor will it end with them. Much has been done in other directions. Much more must be done, in the doing of which there must be the fullest and most whole-hearted cooperation of men and management in the operating field, and of the public and governmetal bodies in aiding in the solution of a national problem, which needs greatly to be solved in the public interest."

After completing his prepared statement, Mr. Scandrett outlined various wage reductions which were imposed on Milwaukee officers during the depression years. There have since been restorations until salaries generally are on the 1931 basis, except his own which is down 52 per cent under that year.

Dean Landis was interested in the causes of the Milwaukee's 1925 receivership; and Mr. Scandrett outlined the development of conditions adverse to the road, including the rate level in Western Trunk Line territory, the opening of the Panama Canal, and the Puget Sound

extension, which question, he said, "always comes up." With the benefit of "hindsight" Mr. Scandrett would perhaps disapprove the extension if it were now proposed; but he pointed out how those who started it in 1905 had an entirely different picture. For example, he said, the Milwaukee was more or less "bottled up" at the Twin Cities after the Great Northern and Northern Pacific, former "friendly" connections, acquired control of the Chicago, Burlington & Quincy with its Chicago-Twin Cities line.

Like Mr. Williamson, Mr. Scandrett would not contend that the pension and unemployment insurance taxes justify a wage cut; but he did point out that from the standpoint of management they were the same as a 5.75 per cent increase in wages.

Wage Scale Potent Frightener of Credit

It was Mr. Holden's opinion that, "the present level of railroad wages is a potent factor in preventing the return of a credit without which the railroads cannot hope to serve their patrons properly or to withstand active competition." "The Southern Pacific," he said, "handles a diversified and well-balanced freight business on more than 13,000 miles of rail lines that directly serve about one-third of the continental United States. In spite of our efforts to increase freight and passenger traffic, the net income of the Southern Pacific Transportation System has declined from more than $47,000,000 in 1929 until in the first six months of this year that system has failed by nearly $12,000,000 to earn operating expenses and fixed charges. Since its incorporation 54 years ago, the Southern Pacific Company has emerged from every financial panic and business depression without resorting to reorganization; but never has it been in the straits in which it is struggling today.

"From what source," asked Mr. Holden, "is a railroad in our situation to secure the funds necessary to improve its plant? With the constantly narrowing margin between operating revenues and operating expenses—more than half of which expenses are wages—it cannot do so by selling capital stock, because no more than the merest hope of dividends can be held out. Nor in the present state of railroad net earnings is it practicable to sell bonds for such plant improvement. In my opinion railroad credit can be restored only by considerably widening the margin between operating revenues and operating expenses.

"We cannot go on paying wages on a peak prosperity scale, when our business does not justify it. The empirical theory that 'ability to pay' should not be considered as a factor in wage disputes may be applied with caution to local or isolated situations in peculiar circumstances, but it has no application to a key industry such as the railroads, which cannot be superseded as a system by any other form or forms of transportation.

1937 Hike Based on "Ability-to-Pay" Argument

"The railroad wage increases of 1937 were urged on the erroneous supposition that business was due for a rapid and substantial increase, which was merely the 'ability to pay' argument used to justify demands for wage increases. 'Ability to pay' is necessarily one of the controlling factors in the re-adjustment of wage levels in a nation-wide industry. For example, it is paradoxical that the Southern Pacific System, while running since the first of the present year at a heavy deficit, should be paying 51 cents on its payroll account out of each dollar it receives in operating revenue, when it paid only 42 cents during 1929, a year in which it earned $47,500,000 above fixed charges. And this situation is the more unreasonable when we consider that the cost of living in 1938 has declined substantially below the level of 1929.

"Even if a railroad survives the loss of net income and loss of credit that is substantially caused by the present high level of wages, the effect on its employee group, taken as a whole, can be nothing less than disastrous. Mechanization as a substitute for labor wherever capital investment in labor-saving machinery is justified, abandonment of branch lines on which a margin of profit has disappeared, substitution of buses and trucks for trains, curtailment of forces, drastic economies—all these we have seen, and of dire necessity we will see many more of them with the continuance of the emergency conditions now prevalent in the railroad industry."

Much of the cross-examination of Mr. Holden, whose direct presentation was conducted by H. C. Booth, general attorney for the Southern Pacific, was comprised of B. of R. T. Counsel Davis' questions with respect to the S. P. tie-up with Pacific Fruit Express. The two-cents-per-mile rate on the P. F. E. cars, the witness said, was fixed when a refrigerator car cost about $2,500—now the cost is $4,500. Judge Hay led a long discussion on the accounting for P. F. E. dividends on S. P. books. It was his contention that the inclusion of the item in "other income" instead of in net railway operating income tended to indicate that the "sheriff" was closer to the S. P. than was actually the case. Mr. Holden explained that the accounting was done in accordance with I. C. C. regulations; and he was sure of Judge Hay's "amiable intentions" when the latter said he was not contending that the accounting was wrong.

High Wages No Help to Men They Force Out

"Higher wages can benefit only those who receive them—they do no good to the thousands of railroad men out of jobs," was a point stressed by Mr. Norris. "In 1929," he added, "the Southern Railway employed 43,626 men. Even in 1932, we had 30,573 men. For the first eight months of 1938, the number averaged only 25,308. If the reduction in wages is made and business increases, as I think it will, we will employ more men and thus the sum total of the purchasing power of railroad employees will be increased.

"In former years we made up an annual improvement budget, but in recent years we have been living from hand-to-mouth and make only those expenditures which are absolutely necessary for safety. To keep a railroad abreast of the times necessitates the expenditure of new capital. New capital cannot be raised unless the net earnings are sufficient to induce private investors to put their money into the enterprise.

"The Southern Railway, and the same thing is true in greater or less degree of other roads, needs rail, more freight and passenger equipment, and more modern equipment. It needs power, and certain of its shops need new tools and modernizing. If we had the money to do these things we could save more. If we do not keep our plant modern we will lose more and more freight and passengers to our competitors, and more and more of our men will lose their jobs.

"The financial condition of the industry has its ups and downs," Mr. Norris went on. "The living costs of employees are at times high and at times low, and there are other variable elements which must enter into consideration in naming a fair wage rate. I agree, therefore, that the wage rate should not be static. I mean by this that in times of general prosperity wage rates have properly responded and have risen. In times of depression and reduced cost of living, wage rates should likewise

respond and be lower. This wage reduction is an exceedingly practical proposition. For the first half of this year, Southern Railway failed to earn its charges by about $3,800,000, at a time when we are paying the highest wages in our history. Southern Railway is not excessively capitalized, in relation to its investment or value, however you may measure it. Its fixed charges are not excessive. Its ten thousand common stockholders have received dividends in only eight of the 44 years of its corporate history, but during those years $117,000,000 which might have been applied to paying dividends has been plowed back into the property, to improve efficiency and service.

Never Hears from "Big, Bad Wolf Called Wall Street"

"In response to the oft-repeated allegation that the financial affairs of railroads are dictated and dominated by that big bad wolf called Wall Street, I know nothing about it," Mr. Norris asserted. "I do know that I have never heard of, and do not know of, any interference by so-called Wall Street bankers, or any other bankers. I do hear frequently and eloquently from our many thousands of men and women stockholders, whom I have learned in recent years to refer to as the forgotten men and women, who have invested their savings in a legitimate enterprise which they thought, and still hope, will be able to make a living."

The foregoing direct presentation of Mr. Norris was conducted by S. S. Alderman, general solicitor of the Southern, while on cross-examination many questions were asked by B. of R. T. Counsel Davis to bring out the witness' views with respect to the importance of the "ability-to-pay" factor in fixing wages. Mr. Norris' reply was that one "can't always expect to get more out of less"; and he added that whether railwaymen like to admit it or not, railroading is a "waning industry." Giving his own view on the 1937 wage increases, Mr. Norris stated it to be one holding that "if we are going to give increases, let some one make us do it and show us where to get the money."

On Dean Landis' recurring question as to whether the pension and unemployment insurance taxes should be considered as compensation to the employees, Mr. Norris replied that he thought the increased costs arising therefrom were in a different category from other expense boosts. Such taxes, he said, were "thrust in our lap when we didn't have the money"; and it seemed to him that when the government did such a thing, some one of its departments should have showed the carriers where to get the money. The witness went on to say that the pension and other such benefits were equivalent to an increase in wages to the employees, and Dean Landis asked why other industries paying social security taxes might not take the same position. Mr. Alderman broke in to observe that the railroad pension system is more liberal than the general social security set-up—a "highly preferential system" he called it; also, the railroads, with their rates rigidly regulated, can't pass on such costs as other industries do.

Present Conditions Preclude Improvements

As an example of how under present conditions it is impossible for a railroad company to expand or improve its property, Mr. Donnelly referred to the situation on the N. P. where "in 1929, we had 49,000 freight cars; we now have 39,000. Up to a short time ago it was possible to finance the purchase of equipment through equipment trusts, and on very favorable terms, by any railroad in such financial condition as to be able to make the initial payment of 25 per cent. The Northern Pacific, since 1934, has put out three of those trusts, to purchase 39 locomotives and 3,000 new freight cars. We need very much to continue this program of equipment purchases. Under present conditions we cannot do so. Late last year our operating department submitted its budget of expenditures to be made in 1938, the total amounting to 11 million dollars. That budget was cut from 11 million dollars to less than 3 million dollars—$2,600,000 for roadway and $250,000 for equipment. The budget for 1939 has not yet been submitted, but it is clear that under present conditions our expenditures must fall below even those of last year."

Refuting charges of alleged overcapitalization of the Northern Pacific, Mr. Donnelly said that "it has been publicly charged by railway employees that the stocks and bonds of the Northern Pacific amount to $560,000,000, while the cost of reproduction, less depreciation, of the railroad is given as only $487,000,000. The employees have fallen into a very obvious—though not unnatural—mistake, because it is one not infrequently made by persons thoroughly versed in railroad financial statistics. This mistake consists in taking the figure of the cost of reproducing the Northern Pacific Railway—that is, the operating property, road and equipment—as being the only property represented by the outstanding stocks and bonds. But these stocks and bonds represent not only the railroad (which, with its equipment, would cost $487,000,000 to reproduce) but also the Northern Pacific's half interest in the Burlington and its half interest in the Spokane, Portland & Seattle. These stocks and bonds include, also, the Northwestern Improvement Company, with all of its coal properties in Montana and Washington, and all of its iron ore properties on the Mesabi and Cuyuna ranges, as well as a large number of other properties of a lesser value. On a modest computation the Northern Pacific properties, outside of railroad equipment, all of which are represented by the Northern Pacific's outstanding stocks and bonds, have a value of $218,000,000. When this amount is added to the figure of $487,000,000 representing the 'cost of reproduction less depreciation,' a total of $705,000,000 of value is produced, a total which is $145,000,000 greater than the par value of outstanding stocks and bonds. Instead of being over-capitalized, as charged the Northern Pacific is substantially under-capitalized.

No Dividends for Six Years

No dividends have been paid on the stock for six years, and the company can, of course, remain solvent, notwithstanding the failure to pay them. The immediate question is that of earning fixed charges. Even if there were outstanding against the Northern Pacific property no stocks or bonds whatsoever, it could not remain solvent when it was unable to earn its operating expenses and taxes. During the first seven months of 1938 it was unable to do that."

Cross-examination of Mr. Donnelly was brief, and after its close he went on to say that he had been impressed with Chairman Stacy's summary of P. R. R. President M. W. Clement's testimony, which summary in Mr. Donnelly's opinion "epitomizes the whole case." This summarization by Judge Stacy, as stated in last week's issue, was as follows: "The managements of the railroads, considering all the circumstances, including the interests of the institution and the men, have come to the conclusion that in the present crisis the 15 per cent wage cut is the best thing to be done."

B. of R. E. Statistician Monroe made his second appearance upon the completion of Mr. Donnelly's testi-

mony, and first answered some questions which Dean Landis had previously asked with respect to the business moving under land-grant rates. Savings to the government, he said, have doubled since 1929 because new governmental agencies claim and receive the land-grant reductions. Also, this witness presented a series of exhibits breaking down average earnings by occupational groups. These data, Mr. Fort explained, would be put in or not as the board desired. The carriers had thought the figures might be helpful, but they did not want the exhibits to be taken to indicate any departure from the institutional or "over-all" nature of the proceeding. Judge Stacy said that to relieve either side of any embarrassment in this connection the board "does not hesitate to say" that it desired the information.

Chairman Enochs, of the Carriers' Joint Conference Committee, after explaining that he was for eight years (1908 to 1916) engaged in union activities as a general chairman of the Brotherhood of Railroad Trainmen, went on to outline the history of wage procedures and adjustments since the war period. He carried this resume through the negotiations in connection with the present controversy and the refusal of the unions to arbitrate—the reason "why we are here today." In the course of his presentation Mr. Enochs identified as exhibits various letters which had been passed between his committee and the labor representatives, and also correspondence with the National Mediation Board in connection with the latter's unsuccessful mediatory efforts. Mr. Fort had the witness read his committee's letter accepting the arbitration offer; and was merely inserting in the record the Railway Labor Executives' Association letter rejecting that offer when Judge Hay asked why the witness did not read that also. Mr. Fort assented and Mr. Enochs "went to town" on the letter with all the eloquence of a "liberal statesman" pleading the cause of "the people." As though his innermost feelings were coming out with R. L. E. A. Chairman Harrison's words, the witness, as Mr. Fort observed, did "full justice" to such phrases as "the wringer should be applied to the capital structure of the railroads and not to the worker's pay envelope"; and "a wage cut at this time in this great national industry would be inconsistent with our national policy and a blow to further business recovery and prosperity." Likewise Mr. Enochs read B. of R. T. President A. F. Whitney's letter holding that an agreement to arbitrate would be "fraught with dangerous possibilities to the economic condition of the United States." These letters, Mr. Fort said, put forth a "new theory," holding that "our case is so strong and yours so weak, we won't arbitrate."

"Deck Hands" Picked 15 Per Cent Figure

In Mr. Enochs, Dean Landis had a witness who could tell him in detail how the decision to cut wages 15 per cent was reached. Mr. Enochs explained that the Carriers' Joint Conference Committee, of which he is chairman, first brought the recommendation into a Chicago meeting of member roads last March. Asked by Mr. Landis if any railroad presidents participated in the discussions which resulted in the framing of that recommendation, the witness replied that "just the deck hands" were in the picture up to that point. To carry his story along from where he reported to this March meeting of the member roads, Mr. Enochs pointed out as "background" how management and men had been co-operating for some time on certain matters. He thought the first "big, constructive" piece of co-operation was that which brought the 1926 amendments to the Railway Labor Act.

"So," he went on, "in the course of the years people became imbued with certain idealistic states of mind as to what can and cannot be accomplished, and they put a value on people's progression of mind." The witness then explained how the wage-cut proposal was "put on ice" at the March meeting where a resolution was adopted to the effect that management would request a conference with labor "to examine the economic condition of the railroads and look into a plan of relief." "There were certain railroad presidents," Mr. Enochs explained in this connection, "who believed that the leaders of these organizations had reached such a state of understanding and of sympathetic interest with the carriers, that they would listen to what the presidents had to say about taking some steps toward ameliorating this general situation. So they came to Washington and that is where they met Mr. Harrison. Of course, it was kicked out the window, because I suppose maybe the people were mistaken—I don't know, but they didn't flux or didn't mix."

"Weasel Words" at Washington Conference

Asked by Dean Landis what was proposed at the Washington meeting, Mr. Enochs said he did not know, adding "I think they both used weasel words."

"You didn't have the 'deck hands' on the job," Mr. Landis observed.

"If they had, more weasel words might have been used," said the witness.

In any event, Mr. Enochs said, no plan for relief came out of the Washington meeting; as he put it the meeting was an affair of "you scratch my back and I'll scratch yours, and we will co-operate; we are going to have a grand big program, we will put it up to Congress and what not." And all the while railway conditions continued to become worse with the result that at a second Chicago meeting, in the words of Mr. Enochs, "the fellows who were advocates of co-operation and 'let us lie down in the bed together as brothers'—they just held their peace. That's when the 15 per cent reduction was inaugurated." This action Mr. Enochs again explained had first been recommended at the March meeting but there were then "certain railroad presidents who felt they were advanced in sociology and 'deal justly with your fellow-man' and all that." These executives, he went on, felt that labor would co-operate, adding that "it just didn't work out that way." And even after the Washington meeting there were some "who thought the matter could be switched off, but the switches never seemed to work." Also, the witness revealed, there was some difference of opinion as to the amount of the cut —some thought it should be more than 15 per cent, while some thought it should be less.

Harrison Appraises Railroad Case

The first of the series of press conferences announced by the Railway Labor Executives' Association was held last Friday, the evening before the opening of labor's testimony on October 8. There R. L. E. A. Chairman Harrison issued a statement appraising the railroad presentation as one indicating that the carriers "are still determined to make labor the whipping boy in a crisis brought about by financial mismanagement." In the week-old hearings, he went on, the management witnesses evaded "important aspects of the one and only issue—over-capitalization; until this is rectified, no amount of wage cuts will be effective in putting the railroad industry on a permanently stable economic basis.

At the same time there was released for publication a telegram in which Senator Wagner of New York assured

R. L. E. A. of his "wholehearted opposition" to any wage cut. "It would be particularly inopportune at this time when every effort is being made to maintain purchasing power," the Senator said. Also, Mr. Harrison revealed that he expected to produce either Senator Wheeler of Montana or Senator Truman of Missouri as labor witnesses before the emergency board. Senator Wheeler, chairman of the Senate committee on interstate commerce, was also chairman of its sub-committee which investigated railway finances, a probe in which Senator Truman also took an active part.

B. M. Jewell, president of the Railway Employees' Department, American Federation of Labor, was the first witness for the 18 organizations making their presentation through R. L. E. A. Mr. Jewell presented an exhibit covering the history of the development of the present wage structure in force in the railroad industry; also, he reviewed briefly the conditions prevailing prior to 1920. After outlining the increases that were put into effect under various governmental orders, the witness discussed a decision of the Railroad Labor Board which, he said, "fixed a scale of wages substantially the same as that prevailing at the present time." Thus it was Mr. Jewells' contention that "the scale of wages or rate of pay and also the average annual earnings were substantially the same in 1920 as at the present time." The witness also emphasized the fact that railroad wages are in accordance with rates agreed upon between the management and the men.

Another Annual-Wage Figure

Meanwhile Mr. Jewell had offered another exhibit presenting in corrected form the Railroad Retirement Board's data on average wages. The principal corrections, it was explained, went to the elimination of duplications which crept into the previously-published figures where different payroll numbers were assigned to the same individuals working at different times during the period under study. One result of the revision was to reduce from $1,115 to $1,101 the average 1937 wage of all persons who had any work in the railroad industry during that year. The $1,115 has been labor's favorite annual wage figure in the statistical battles which have accompanied the present controversy. Also, the revised figures show that 111,000 workers, whose 1937 wages entered the $1,101 average, earned less than $10 during the year; this $10-a-year group totaled 109,000 in the original compilation which came up with the $1,115 average 1937 wage.

It was Mr. Jewell's opinion that many men shown to have worked only one month in 1937 might be attached to the railroad industry. He explained, by way of example, that many furloughed trainmen and shopmen, take short-term, extra-gang work while awaiting the call to return to their regular occupations.

Mr. Jewell was followed by H. A. Bacus, research director for the Brotherhood of Railway Clerks, who presented exhibits showing the post-1920 trends of average annual compensation and average hourly earnings. His figures showed that the average hourly compensation in June, 1938, was 72.1 cents, only one cent higher than the 71.1 cents shown for 1920's fourth quarter. In response to Judge Hay's questions the witness explained that the 1920 figure was on a different basis than those for subsequent years, but he nevertheless thought the comparison valid because the effect of the changed basis was to offset the effect of the change in the character of the railway labor force, i.e., the furloughing of the lower-paid workers to leave a greater proportion of the total force in the higher paid groups.

When Judge Hay suggested that the figures used by Dr. Bacus were those appearing in the "little buff book" Dean Landis wanted to know if the remark meant that authorship of that book (The Wages of Railroad Labor, 1938) was admitted. Judge Hay replied that the witness had written most of the "little buff book," adding "but where, Oh, where, is the daddy of the little gray book?" R. L. E. A. counsel's reference was to management's "Railroads and Railroad Wages, 1938," which had been the subject of some by-play during the presentation of Dr. Julius H. Parmelee, director of the Bureau of Railway Economics.

Different Bases Used in Compilation

Mr. Fort brought out that up to 1920 the Interstate Commerce Commission calculated average hourly compensation on the basis of time on duty; in subsequent years the basis has been service hours paid for. As an example of the difference Mr. Fort cited the case of an engineer who completed the basic day's run of 100 miles in three hours; his working time would enter the 1920 figure as three hours, but it would enter the figures for subsequent years as eight hours. The railroad counsel went on to ask the witness if he had acted under instructions in preparing the exhibit without adjusting the figures to reflect the changed basis. Dr. Bacus replied that he "wouldn't claim originality" for the method which, he said, had been used in I. C. C. compilations and in the 1937 edition of "Railroad Facts" published by the Western Railways' Committee on Public Relations. The latter, the witness explained, omits the 1920 figure, but does use the 1916 figure calculated on the same basis. "It was a great break you found that book," Mr. Fort observed. Dr. Bacus replied that he didn't find it—it was given to him by "one of the railroad representatives."

In further questioning Mr. Fort brought out that the witness had made no test to determine the effect on the averages of the change in character of the force. Dr. Bacus said that changes in classifications precluded the making of such a test. He also told Dean Landis that on his basis the increased speed of trains would have no effect on the figure for average compensation per hour.

On Attachment to Industry

L. E. Keller, director of statistical and research work for the Brotherhood of Maintenance of Way Employees, presented testimony designed to show circumstances which might entitle a part-time worker to claim attachment to the railroad industry. In practice, he said, section forces are doubled in Summer, but during the Winter lay-offs the men retain their seniority rights and are governed in this connection "substantially the same" as all railroad workers. The Retirement Board study, as Mr. Keller interpreted it, does not reflect the existence of a great number of casual workers; he explained that while it shows some men doing little work in 1937, it does not indicate that most of these men return to their railroad jobs year after year. Also, he pointed out, that the Retirement Board study showed that only 27.26 per cent of the total section-hand force worked in each of 1937's 12 months; 27.89 per cent of the section men had work in only one month.

In general Mr. Keller said that to the extent that casual workers do come and go in the railroad industry, they would be found among track men; but he did not want to be understood as conceding that there is any great number of casual workers even in the maintenance of way department. Also, he told Mr. Fort that the railroads thus far have declined to accept his organiza-

tion's invitations to confer on the matter of ironing out seasonal fluctuations in maintenance of way department employment.

Later Mr. Keller returned to the stand with testimony on the post-1920 movement of the average cost per ton-mile as compared with the wages paid per ton-mile. Since 1920, he said in this connection, the average cost to the public for hauling a ton of freight one mile has dropped 11.1 per cent, but during that same period the wages paid railway workers per freight ton-mile dropped 38.6 per cent. He further contended that had the railways given back to the public, in reduced freight rates the savings they realized in the reduced wage costs, there would not have been such great losses in business to trucks and other competitive forms of transportation.

Sees Workers Getting Less for More Work

"Railway employees during the past 18 years have been receiving less and less in wages for producing more and more in transportation service," Mr. Keller asserted. "Tons of freight hauled per employee have increased 87 per cent; total wages received by railway workers have dropped 46 per cent; employees per mile of road have declined 48 per cent; car-miles per dollar of wages have gone up 85 per cent; and the portion of operating revenues used to pay wages has dropped 20 per cent. For every dollar paid in wages in 1920 only 54 cents is paid now. One million men are handling more gross business today than two million men handled 18 years ago. The length of trains has increased by 26 per cent, and the speed of trains has risen 53 per cent. But with longer, heavier and faster trains we have made railroading so efficient that a person is safer today in a railroad passenger car than in his own home.

"Operating expenses, including wages, have fallen 46.5 per cent, much more than the decline in railway operating revenues, and the roads have been granted freight and passenger rate increases by the Interstate Commerce Commission, but still the railways just will not put away their crutch and tin cup. Notwithstanding the fact that the service output on the part of railway employees has almost doubled while their total compensation has been reduced by almost one-half, the railways are insisting upon a further 15 per cent reduction in wages. If railway wages were reduced under such indefensible circumstances as these, there would, undoubtedly, be a wage-slashing campaign throughout the entire nation and business would find itself in another tailspin."

In cross-examination, Mr. Fort brought out that Mr. Keller had not intended to assign credit as between capital improvements and workers for the increased efficiency which he outlined; the witness explained that he was showing the net results of all forces. He went on to assert that, in the wage-cut conferences, management did not take the position that wages were too high, but insisted that wages had become too great a burden on the industry. Thus the witness had studied operating factors with a view to determining whether wages constituted an increasing or diminishing burden. "We have shown conclusively that wages have been a constantly diminishing burden," he added.

Mr. Fort also brought out that 1920, used as the base in many of the Keller exhibits, was a year which included periods of federal control and of the federal guarantee. The railroad counsel suggested also that by using 1920, when the operating ratio was 94 per cent, it was possible to show greater improvements than would have been the case had 1921, for example, been used. Also, it developed that Mr. Keller, like Dr. Bacus, had not adjusted his comparative hourly-earnings figures to eliminate the effect of the different base used in 1920 from that of subsequent I. C. C. reports. The witness agreed with Dean Landis' suggestion that the proportion of the railroad dollar going to pay wages has remained fairly constant; but he added that total wages have declined more than total operating expenses.

The stated purpose of the testimony of David Kaplan, statistician for the International Association of Machinists, was "to show that railroad wages have not kept step with wages paid in other industries." Despite wage increases in August and October, 1937, he said, railroad workers have made less progress in wage improvements in the last 18 years than workers in most other industries. The comparison of payroll progress since 1929 is even more unfavorable to railroad workers, he asserted, citing figures of the National Industrial Conference Board and the U. S. Bureau of Labor Statistics.

The witness traced wage improvements since 1920 in the 23 industries for which data are available. Railroads, he alleged, rank 20th among them. On the basis of employee earnings since 1929, he contended, railroads rank 18th. Out of 25 industries studied on the basis of employee earnings since 1933 and 1936, he asserted, the railroad industry stands 23rd.

Mr. Kaplan also compared the wage standards of railroad crafts with similar crafts in other industries, contending that railroad wage rates are below the rates paid workers in comparable occupations. The railroad industry, he declared, was the last of the major industries to increase wages in the recovery period that followed the last depression. The 8 per cent increase given railroad workers in August and October, 1937, he found to be only one-half of the average increase obtained by 8,500,000 workers in manufacturing industries.

Wants Autos Included in "Cost of Living"

The foregoing testimony of Mr. Kaplan was developed as he explained a series of exhibits on which he was subjected to considerable cross-examination by Mr. Fort and General Solicitor Faricy of the C. & N. W. Criticising the cost-of-living indexes offered during the railroad presentation by Dr. Willford I. King, professor of economics in New York University's School of Commerce, the witness called such indexes "entirely deceptive and misleading," in that they measure only the behavior of prices and give no proper consideration to the cost of new items entering a standard of living. "In other words," as Judge Stacy summed up the point, "the basket Dr. King used doesn't remain constant." The witness assented, explaining by way of example that many 1923 workers did not own automobiles, and thus an index must consider not the post-1923 changes in automobile prices, but the whole cost of a new car added to the worker's budget. Mr. Fort brought out that a rise in the purchasing power curve on the price basis would indicate the development of a margin permitting satisfaction of new wants.

Kaplan Shuffles His Figures

Also, railroad counsel developed the fact that Mr. Kaplan followed the plan of previous labor witnesses in compiling their figures of average earnings per hour, i.e., they used the old I. C. C. basis for the 1920 data and the new basis for subsequent years. It was the witness' contention that his trend would have been substantially the same if he had adjusted the data so that all years would be on the same basis. To a later question on some of his figures, Mr. Kaplan replied that the data cited gave the railroads "a better break than they de-

serve." "Oh! I knew you'd do that," Mr. Fort observed.

Mr. Faricy brought out the fact that the Kaplan exhibits generally pertain to wage rates or hourly earnings, but do not reflect the amount of employment workers in other industries enjoyed under such wage scales. The witness had no figures on these employment situations. Asked by Mr. Faricy if the amount of pay a man gets at the end of the week were not an important factor in a wage set-up, the witness replied that he had limited himself to "a measure that measures the value of the service—the earnings per hour." When the C. & N. W. general solicitor persisted with the suggestion the regularity of employment is a desirable feature of any job, Mr. Kaplan expressed the view that the board should not take such a thing into consideration, since it was passing only on a proposed cut in the wage rate. Later Dean Landis suggested that the witness wouldn't want to leave the board with the impression that regularity of employment should not be a factor in fixing a wage rate; and Mr. Kaplan replied that the amount of employment should be a factor in fixing the rate for a particular type of employment.

Dean Landis had previously asked if the position of the railroad industry in Mr. Kaplan's tables reflected its ability to pay; and the witness replied in the negative, adding that if such were the case the railroad hourly wages would be "very high" in 1929 and 1914. Then Mr. Landis went on to suggest that it would be hard to develop an index of "ability to pay" for various industries. Mr. Kaplan thought it would be "very difficult;" and he assented to the dean's next observation that "in dealing with a question of that kind one has to go largely 'by guess and by God.'"

Admits Falsity of $1,100 "Annual Wage" Figure

Director Keller of the Brotherhood of Maintenance of Way Employees' statistical and research work here returned to the witness chair to testify with respect to an analysis which he had made of the Retirement Board study showing average annual wages of railway workers. Mr. Keller cited various different annual averages which have been mentioned in the case, adding that he thinks "it has become obvious" that management's figures of over $1,700 are too high, just as the Retirement Board study's $1,101 for all workers who received any 1937 work is "too low." Previously an $1,115 figure which was the uncorrected version of this $1,101 had been labor's favorite annual wage figure—the one R. L. E. A. Chairman Harrison put into his brief talk for the newsreels on the hearing's opening day.

R. L. E. A. Denies Talk of Compromise

During the October 11 sessions of the hearings the Railway Labor Executives' Association distributed to the press a statement denying a report published in a Washington newspaper on the previous day to the effect that "certain unnamed labor leaders were 'privately' hoping for a compromise settlement of their wage dispute with railroad executives."

"The only concern of our organization," the statement asserted, "is to carry out the mandate of organized employees, who have voted to strike rather than accept a 15 per cent cut in their wages. Nor can it be assumed that, even before labor had a chance to present its case, an authorized spokesman of the Association, or any other sincere leader of organized railroad labor, would make such defeatist speculations on the outcome of this controversy as were alleged."

The October 12 session was devoted to the testimony of Monsignor John A. Ryan, professor of social ethics at the Catholic University of America, and of R. L. E. A. Chairman Harrison. Monsignor Ryan said that his views did not represent those of the university nor of the National Catholic Welfare Council, with which he is also affiliated—his role in the witness chair, as he put it, was that of "an alleged expert in the field of the ethical side of industrial relations." His argument against the wage cut was "mainly ethical," Dr. Ryan said, as he proceeded to read a prepared statement in which he undertook to show that "the contemporary wage cut would be against social justice both for the community as a whole and for its constituent groups."

Little Worth In Wage Comparisons

The witness conceded that increases in individual productivity may be due "to new processes and methods as well as to harder work or greater skill on the part of the employee"; but he has found it to be "generally recognized, and properly so, that the workers ought to obtain some profit from technological improvements." It was Dr. Ryan's opinion that comparisons of wages in different industries have "very little ethical value," since the data being compared do not necessarily represent "just rates." In this connection the witness called the cost-of-living standard "the most fundamental"; and for his definition of "decent livelihood" he went to Pope Pius XI's encyclical published in 1931. Judged by that standard he found the proposed 15 per cent wage cut "utterly devoid of ethical validity." The witness went on to criticize cost-of-living indexes which do not allow for changes in items entering the worker's budget. In support of other points which he made, Dr. Ryan quoted various economists, industrial leaders and President Roosevelt. He admitted that the railroad situation was "very difficult, in many cases critical"; and he saw "no way out except to reduce interest charges"—a course which "in all probability will have to be adopted by many other industries also before the country can get back to anything like a fair degree of prosperity." There was no cross-examination of Dr. Ryan; Mr. Fort said that insofar as the witness' testimony needed a reply, the railroads would make it in their oral argument.

After outlining his railroad and other experience, R. L. E. A. Chairman Harrison said that his testimony would be based on some 25 or 30 exhibits dealing primarily with the financial condition of the railroad industry. As these exhibits were introduced, the witness offered brief comment on each. The first he described as an assembly of 29 tables showing the results of applying the railroad capital and debt outstanding to various items of railroad operation. This followed "pretty closely" the formula followed by Witness Keller in his exhibits designed to show the increasing efficiency of railroad labor; Mr. Harrison's exhibit was also designed to show the efficiency of labor, but in another way, i.e., by showing "the inefficiency of the invested dollar."

Says Traffic Can't Support Capital Set-Up

Continuing to highlight his financial exhibits, the R. L. E. A. chairman contended that the chief trouble with the railroads is that there is too much capital in the industry to be supported by the amount of business now available and likely to be available to the railroads. The witness stressed the fact that he was not charging overcapitalization from the standpoint of official valuations; but he thinks it is "just as immoral" to demand a return on the

investment in idle plant as it would be for the furloughed workers to demand wages. As Mr. Harrison calculated it, the return on the "used" investment was 2.82 per cent in 1937. It was also the witness' contention that railroad investments in non-railroad operations contribute largely to the bonded indebtedness of the carriers.

Dividing all railroads of the country into three classes, Mr. Harrison referred to the first class, representing approximately one-third of the mileage, as "those on top." Their financial condition, he added, is "good." The second group, representing another third of the mileage, he referred to as "problem railroads;" these manage to operate at a profit during good times but their fixed-charge set-up makes them "shaky" when business drops. The remaining third of the roads are those in receivership or trusteeship, which, the witness pointed out later, do not have to pay fixed charges—they're "lying behind the log waiting for the sun to shine."

The groupings, Mr. Harrison explained, were not his own—they were those used in data submitted by Interstate Commerce Commission Chairman Splawn to last March's White House railroad conference. One of the Harrison exhibits (from which, he said, the board would "begin to understand why we have a railroad problem,") showed that the aggregate cost of reproduction less depreciation of the roads in the "middle" and "bottom" groups as of December 31, 1936, was $6,564,691,198 as compared with a figure of $8,359,425,028 for total capital stock and funded debt outstanding. The witness was not contending in this connection that these roads are overcapitalized; he conceded that they have other assets, which, however, "are unproductive for transportation purposes," with the result that the railroads themselves have to earn the money to meet the fixed charges. In another exhibit Mr. Harrison called attention to a column setting forth dividends paid in 1937, not that he wanted to lay any "particular emphasis" on such disbursements, but "just to give the board the information."

Suggests Use of Stored-Up "Fat"

In answer to the six railroad presidents who had appeared as witnesses during the carriers' presentation, the R.L.E.A. chairman submitted balance sheet statements of each of those six roads from 1920 to 1937. His general deduction was that these figures showed that the roads in question have during the past 18 years stored up sufficient "fat" to enable them to continue to operate profitably without a reduction in wages. The witness realized that the corporate surpluses shown may represent many unliquid items, but he took the position that if "they put it into securities they can't get it out of, that's not my business." Among the six railroads was the Chicago, Milwaukee, St. Paul & Pacific, which is in trusteeship and thus not paying its fixed charges. In such a case Mr. Harrison found the "significant figure" to be net railway operating income and not net income as was the case with the other roads not yet in the hands of the courts. The Milwaukee, he pointed out, reported some net railway operating income in every year since 1920.

Among Mr. Harrison's other exhibits were those giving comparisons of payroll figures before and after last year's wage increases, and general indices of business activity. With reference to one of the railroad witnesses' suggestion that labor should have taken a voluntary deduction as they did in 1932, Mr. Harrison said that to compare 1932 with 1938 "is like contrasting a patient on the road to recovery with one who is dead or about to die." As evidence of railroad "recovery" he cited the current carloading figures which, he said, compare "favorably" with those of March, 1937, when labor first served notice of its demands for last year's wage increases.

Mr. Harrison also reviewed briefly the White House conferences and other labor-management meetings of last Spring out of which came the railroad relief program introduced in the last session of Congress but blocked on Capitol Hill when labor made it a pawn in the controversy over the wage cut, which had meanwhile been announced by the carriers. In this discussion Mr. Harrison told of how "consternation broke loose" among the labor leaders at the Washington meeting where the railroad executives first suggested the idea of a wage reduction. At that time, he told Dean Landis, no percentage was mentioned—the only definite suggestion was that labor should agree to something like the 1932 deduction.

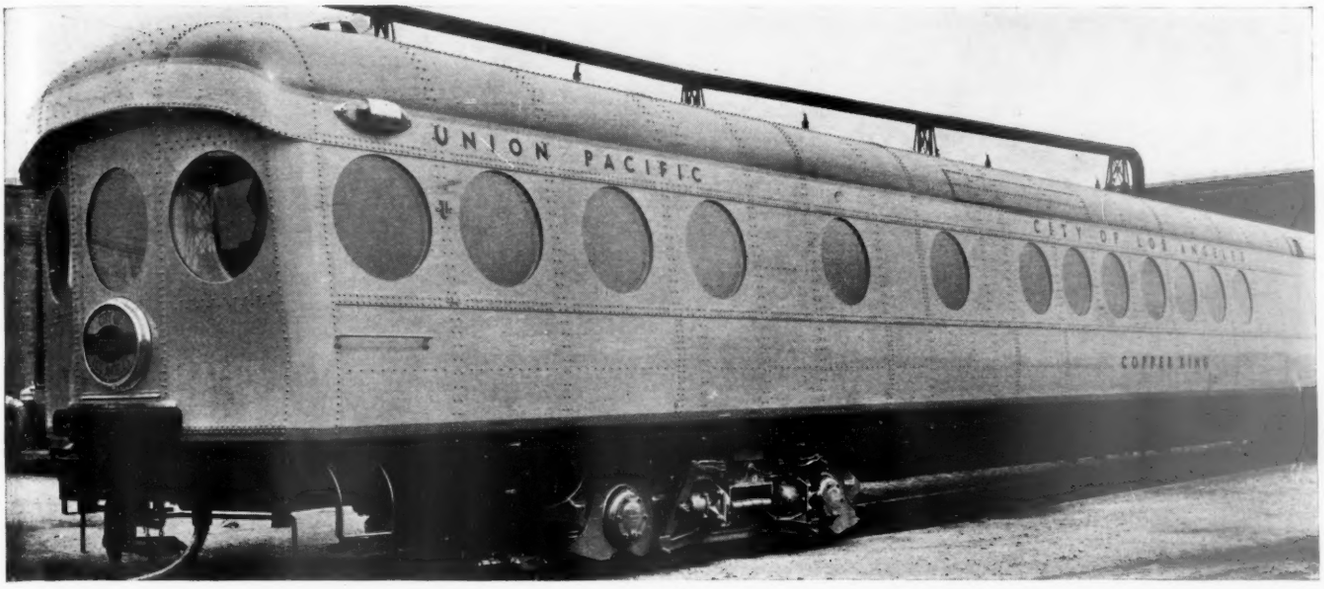
A. F. of L. Pledges Support

As his final exhibit Mr. Harrison introduced a telegram he had received from William Green, president of the American Federation of Labor, which was meeting at Houston, Tex. Mr. Green said that the A. F. of L. officers and delegates had directed him to transmit to Mr. Harrison and his associates "their full and complete assurance of support in all the efforts you are putting forth to resist the imposition of a wage reduction upon the railroad workers of the nation." The telegram also said that the A. F. of L. "will support you to the full extent of our resources in the event you are compelled to engage in a strike against any attempt which may be made to force the railroad workers of the nation to accept any reduction in wages."

Meanwhile the Railway Labor Executives' Association had held its dinner for the press at the Hamilton Hotel of October 10. Speakers were Senator Pepper of Florida, R. L. E. A. Chairman Harrison and Judge Hay. On October 11 Chairman Enochs of the Carriers Joint Conference Committee held a press conference at which he assembled members of his committee to answer questions of reporters.

* * *

Three of Nine Diesel-Electric Locomotive Units Ordered Recently by the Seaboard Air Line Shown Under Construction at the Plant of the Electro-Motive Corporation, La Grange, Ill. The Units are Designed to Run in Combinations of Three



Union Pacific Observation-Lounge Car "Copper King"

Union Pacific Streamliner Is Re-equipped

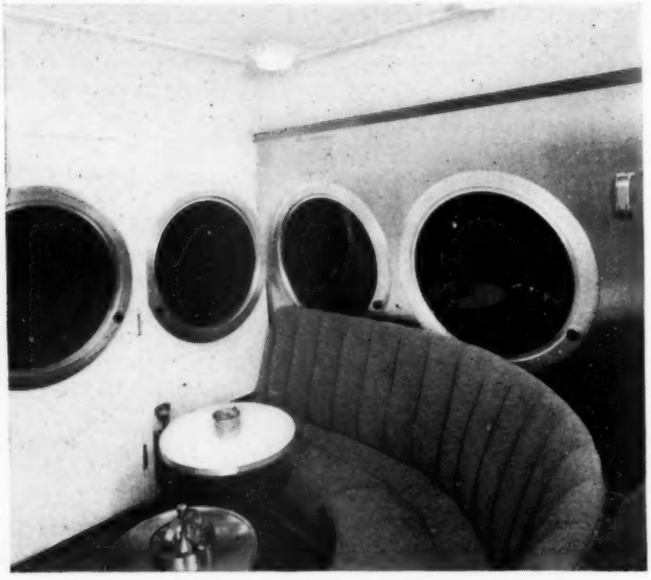
City of Los Angeles now has more powerful Diesel-electric locomotive and two additional cars including the spectacular observation-lounge "Copper King"

THE Union Pacific streamliner (LA-4) City of Los Angeles, recently renovated, increased in size, and placed in service between Chicago and Los Angeles, Cal., as announced in the *Railway Age* of August 6, originally was comprised of a two-unit 2,100-hp. Diesel-electric locomotive equipped by the Electro-Motive Corporation, and nine aluminum alloy and high tensile steel trailing car units constructed by the Pullman-Standard Car Manufacturing Company. This train, inaugurated about 2½ years ago, as described in detail in the *Railway Age* of May 30, 1936, now consists of a two-unit 2,400-hp. Diesel-electric locomotive and 11 reconstructed and remodeled trailing car units, one of which, the observation-lounge car "Copper King," makes a spectacular appeal to passenger interest because of several features of construction and interior treatment used for the first time in railway service.

For example, the exterior construction of the observation-car end embodies an entirely new principle of streamlining designed to prevent the formation of a low-air-pressure space back of the train which would tend to pull up dust and dirt from the roadbed and obscure the vision. Besides being air-conditioned and equipped with the latest Burgess multi-vent system of ceiling air delivery, this observation car is "light-conditioned" by means of 29 Polaroid variable-density windows, the first installation of this kind to be developed.

These circular windows, 27 in. in diameter, may be adjusted to admit any desired amount of light in accordance with individual passenger requirements simply by turning a knob at each window. In addition to reducing or completely stopping the transmission of light when desirable, these windows may be used in the maximum-visibility position to eliminate glaring sun rays

Interior Decorative Treatment, Lighting Fixtures, Equipment, Etc., in the "Copper King"



Close-Up View Showing Polaroid Window Construction—Also Curved Settee in the Observation End

and give a substantially improved view of the passing scenery.

As suggested by its name, the "Copper King" is highly colorful and the first railway car to utilize copper as the predominant decorative feature. The interior side walls are made of copper-covered plywood, or Plymtl panels, the exposed surfaces being rubbed to a satin finish and covered with a coat of clear lacquer. Tables, smoke stands and other accessories are constructed of copper bronze and the same metal has been skillfully used in furniture of special design. The service buffet near the entrance of the car is an attractive combination of copper and glass. As a result of this interior treatment, the car gives an impression of richness and beauty enhanced by the contrasting shades of green and henna in the upholstery materials and the carpet.

Car Equipment Rebuilt at Omaha Shops

The rebuilding and re-equipment of the City of Los Angeles was necessitated not by any structural design in the original cars but by the demand for larger passenger-carrying capacity and the desire to combine improvements shown by experience to be desirable with other absolutely new features which it was felt gave promise of appealing to the traveling public. The work was done at the Union Pacific car shops, Omaha, Neb.

The consist of this streamliner is as follows: One auxiliary-baggage-dormitory car; one chair car, seating 40; one chair car, seating 48; one diner-kitchen car, seating 32; one diner, seating 60; three 11-section sleepers with accommodations for 22 passengers each; two 7-bedroom 2-compartment cars accommodating 18 passengers each, and one observation-lounge car, seating 41. The total capacity is 190 revenue passengers, of whom 88 can be accommodated in the coaches and 102 in the sleepers.

Changes Made in the Original Cars

The rear coach-buffet car of the original City of Los Angeles was converted into a chair car and the two chair cars are now located at the head end of the train. The new auxiliary-baggage-dormitory car was rebuilt from one of the extra auxiliary-baggage cars. The baggage-dormitory-kitchen car was converted into a kitchen-diner and the diner-lounge car was converted into a full diner. A 7-bedroom, 2-compartment, Pullman car was added to the train; also, the observation-lounge, constructed from the auxiliary-mail-baggage car of the nine-car train, was added. All of the rebuilt cars are of aluminum alloy and high tensile steel construction. The outside color scheme of the original City of Los Angeles was retained but the exterior lettering of all cars was changed to a new and more modern design.

The auxiliary-baggage-dormitory car, rebuilt from the auxiliary-baggage car, had its side framing altered where necessary to block out old windows and apply new windows. The two rear baggage side doors were eliminated and the openings closed with aluminum alloy sheets and framing. This car is equipped with auxiliary engines for furnishing power for lighting, air-conditioning equipment, electrical appliances, etc.; also, it has a room for the storage of baggage and a crew-dormitory compartment with sleeping accommodations for 18 men. The dormitory section is air conditioned and has toilet and shower-bath facilities for the dining-car crew.

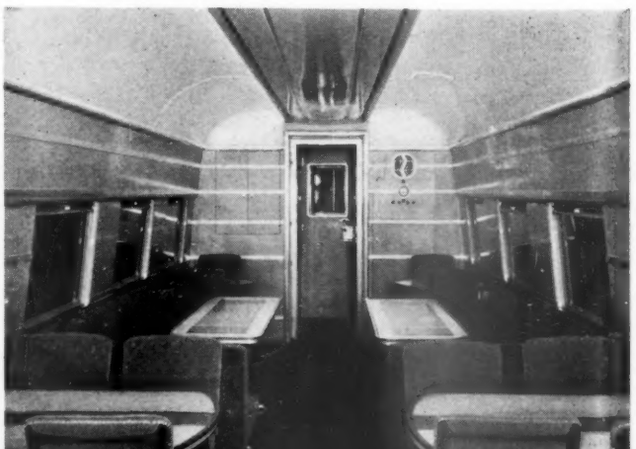
In the first chair car, converted from the original coach-buffet, the buffet equipment was eliminated, the rear end being cut off and a new rear end built in its place, incorporating an anti-telescoping arrangement. The center sills were altered to accommodate the application of draft gear. All seats were re-upholstered and the color scheme changed from blue to tan color. Also, the entire passenger compartment floor was covered with carpet.

No changes were made in the second chair car except that all seats were re-upholstered, the color scheme changed from blue to tan color and the floor of the passenger compartment carpeted.

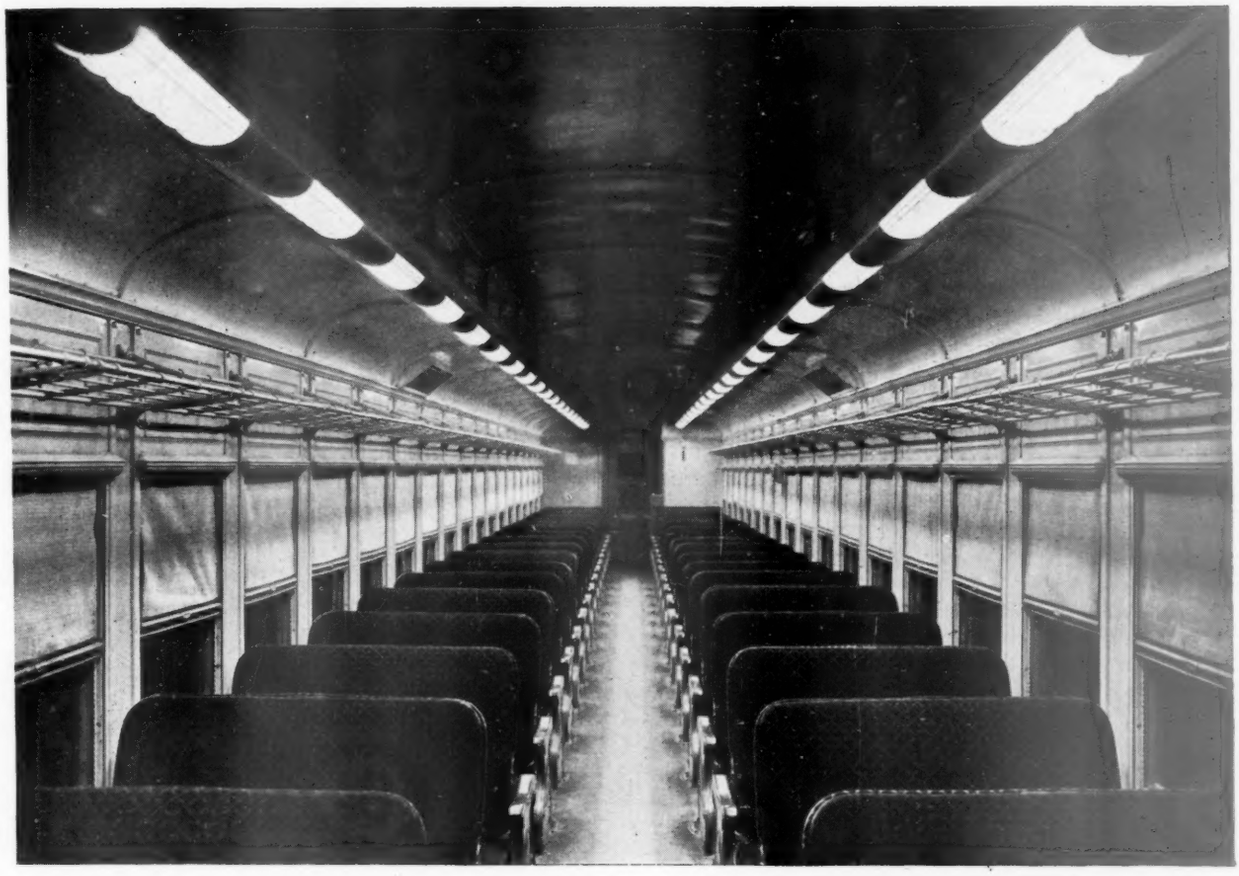
The diner-kitchen car, converted from the baggage-dormitory-kitchen car, had the side framing altered where necessary to accommodate new windows. Baggage doors were eliminated and the openings closed with aluminum alloy material. Other than the kitchen, the interior of this car was refinished and a new ceiling applied of Burgess metal panels, which form the overhead air ducts for air conditioning.

Side framing and side sheets were altered to permit installing windows for the dining-room section. The dining chairs have aluminum frames with Dunlopillo cush-

(*Continued on page 562*)



The Full-Length Diner Has a Cocktail Section at One End



Fluorescent Lighting for Cars

New York Central quadruples illumination without increasing power requirements

FLUORESCENT lighting units, a newly developed product in the lighting field, have been applied experimentally to coach lighting by the New York Central Railroad. An installation has been made in a standard coach, the only change made to the car being the new lighting system. The power supply system remains a 2 kw. generator with 300 amp. hr., 16-cell, lead storage battery.

This experimental installation was made to determine the ability of these lamps to withstand conditions of railway coach lighting service, the suitability of the inverting equipment required to produce the necessary alternating current power, and to determine the possibility of operating this equipment from the standard generator and battery used in coach lighting service.

The outstanding feature of the installation is the securing of approximately four times the illumination with only a small increase in the wattage input to the system. This result has been made possible chiefly by the characteristics of these fluorescent lamps. One of these lamps with a 16.5-watt overall input delivers considerably more light than the 25-watt incandescent lamps which they replace. The 25-watt lamps were spaced one over every other seat whereas the low wattage required by these new lamps permitted the spacing to be halved and a lamp located over every seat. Some increase in illumination is also secured because of the use of metal reflectors over the new lamps instead of glass which reduces the amount of light transmitted upward to the ceiling.

The lamps are tubular in form and contain mercury vapor. An electric arc through this vapor develops ultraviolet light but produces very little visible light. By coating the inside of the tube with certain materials, it is possible to change the wave length of the light from the invisible to the visible portion of the spectrum, this phenomenon being known as fluorescence. Lamps producing light of different colors at varying efficiencies can be secured by selecting various coatings. The lamps used in this test installation produce a white light at an efficiency of 30 lumens per watt. An efficiency as high as 60 lumens per watt is possible when a fluorescent material giving a green light is used, but light of this color might not be acceptable for general lighting purposes.

General lighting in the car is supplied by forty 15-watt tubular (white) fluorescent lamps, mounted in continuous fixtures along the deck sill moldings with the lamps about 7 ft. 6 in. above the floor, one over each seat. The seats are spaced on 36-in. centers. The lamps are 18 in. long by 1½ in. in diameter. The fixtures have a semi-cylin-

drical Alzak reflector at the top and plastic louvers at the bottom which prevent seeing the bare lamps when looking down the car. The power consumption of the lamp proper is 15 watts. An additional 1½ watts is consumed in a ballast reactor, which is required to stabilize the operation of the lamp. These reactors are mounted in closed sections of the fixtures between the lamps.

In addition to the fluorescent lamps, there is one 25-watt, 32-volt incandescent lamp over each of the two end seats, one in each toilet and two in each vestibule. Thus the power consumption for lights is 660 watts for the fluorescent units and 200 watts for the incandescents, making a total of 860 watts. When the car is running the average illumination is 10.1 foot-candles on the reading plane at the window seats, and 11.7 on the aisle seats, with a general average of 10.9. The lamps in the vestibules are mounted in twin condenser lens fixtures, which provide an intensity of 4.3 foot-candles on the platform at the center of the vestibule, 2.2 at the edge of the top step, 1.6 at the edge of the other steps and the light extends well out from the car when the vestibule side doors are open.

The fluorescent lamps require alternating current for their operation and this is obtained by substituting a rotary inverter (motor-driven commutator) for the customary lamp regulator. The inverter takes 32-volt direct-current power from the battery and generator and delivers 60-cycle, 115-volt energy to the lamps. The alternating-current voltage is proportional to the direct-current voltage and the latter varies from battery voltage at standing to generator voltage when the car is running. This does not make a noticeable difference in light intensity, since the light output of the fluorescent lamps varies only in the ratio of 0.8:1 as contrasted with the 3:1 ratio characteristic of incandescent lamps. The maximum voltage on the fluorescent lamps is about 130.

The lamp regulator commonly used in a passenger car is required to protect the lamps from over voltage while the generator is running and battery charging. The efficiency of the inverter is about 75 per cent, a figure which corresponds closely to the efficiency of a lamp regulator. Protection for the incandescent lamps in the car is secured by a fixed resistance which is inserted in the incandescent lamp circuit automatically when the generator begins to charge the battery. The fluorescent lamps are controlled by circuit breakers and are connected in two circuits so that either all or alternate lights may be used. The following is a partial list of apparatus used for the installation:

Fluorescent lamps, Incandescent Lamp Dept., General Electric Co., Nela Park, Cleveland, Ohio.

Fluorescent lighting fixtures, Dayton Manufacturing Co., Dayton, Ohio.

Vestibule lighting fixtures, Safety Car Heating & Lighting Company, New Haven, Conn.

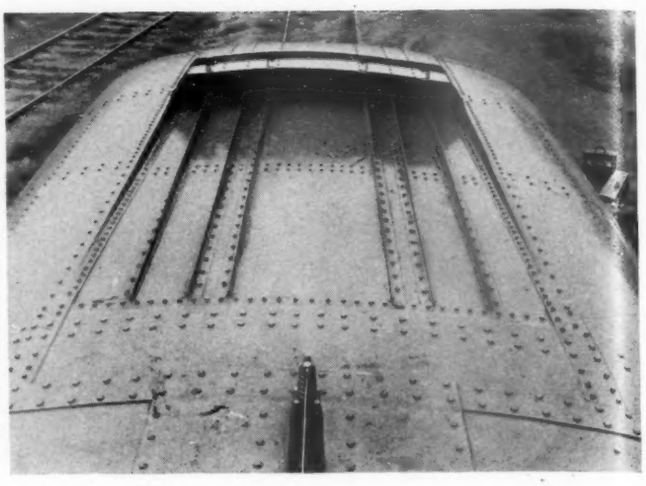
Inverter, Consulting Engineering Laboratory, General Electric Co., Schenectady, N. Y.

The installation was developed by the Equipment Engineering Department of the New York Central Railroad in conjunction with the General Electric Company and with the co-operation of the fixture manufacturers.

Union Pacific Streamliner Is Re-equipped

(*Continued from page 560*)

ions. Tables are rubber covered. The inside finish is tempered Presdwood, aluminum covered, and the ceiling consists of perforated metal panels. The lights have a new-type double-prismatic lens, furnished by the Safety Car Heating & Lighting Company.



Air-Duct Intake in the Car Roof at the Observation End

The diner-lounge car was converted into a full diner, the number of tables being increased and a cocktail section added at the rear to give a total capacity of 60. This car is notable for the good taste and beauty of its appointments, as well as for the unusually large seating capacity.

The observation-lounge car, converted from the auxiliary-baggage-dormitory car of the original train, had a new rear-end framing applied, with provision for an air duct across the roof, which discharges and forms a down-flowing curtain of air at the rear end of the train. This supplements air which is forced through slots in the bottom skirts at the rear end of the car and tends to eliminate rear-end suction which raises and draws up dust from the roadbed.

The side framing of this car was altered, new members and sheets being applied where necessary for windows. Each of the 29 Polaroid windows consists of two Polaroid discs, the outer disc being stationary and the inner one being capable of revolution through 90 deg. by simply turning a small handle or knob. Dehydrated sash are also installed at each window, consisting of an exterior plate glass and an interior safety glass. The interior side finish of this car is 7-ounce electrolytic sheet copper which has been applied to ⅜-in. plywood in panels approximately 5 ft. by 10 ft. The plywood panels are protected on the back side by 2-ounce copper. Window openings are pre-cut and all edges lapped with copper and solder sealed to exclude moisture.

The ceiling consists of perforated metal panels which also form the air-conditioning duct. The car has dual air-conditioning equipment, similar to that in other cars, consisting of Sturtevant blowers and Frigidaire compressors. So that they will in no way detract from the daring ensemble of copper and green hues, the ceiling light fixtures are especially designed and selected for their simplicity and serviceableness. Thirty such fixtures, each equipped with a diffusing lens, are recessed in the ceiling at points directly above the interesting grouping of the furniture. The bands of the fixtures fit flush with the ceiling of the car and are painted a pastel tone to blend with the ceiling. No other light fixtures are used.

The car is equipped with overhead electric heat and dual steam and electric floor heat, steam-heat equipment and controls being furnished by the Vapor Car Heating Company. Waughmat draft gears are used for the auxiliary-baggage-dormitory car, for the front of the first coach and the rear of the observation-lounge car.

Track Sentry Signal

TO increase the safety of forces working on or about the track, the Q & C Company, New York, has developed an electrically-operated signal warning device, which, attached to the track, automatically warns the men of the approach of trains or cars, and thereby eliminates the necessity for "lookout" men. This device, which is based on the latest developments in the electronic field, is capable of protecting one or more tracks simultaneously from either or both directions.

The equipment, which is portable, consists of two carrier-frequency transmitters and one receiver, which control a siren warning signal. The transmitters are coupled to the track rails at the extremity of the zone to be protected, the length of which will depend largely upon the speed of trains and the character of work being performed. The receiver is coupled to the rails near the gang that is to be protected. Six-volt storage batteries furnish power for the generation of the carrier current and for the operation of the receiver and the siren.

The transmitters produce a carrier current of very low amperage and high frequency (in excess of 100,000 cycles) which is received continuously by the receiver. Any interruption of this reception causes a stick relay in the receiver, which controls the siren, to close, setting off the siren. Thus, with normal operation, the wheels of cars or locomotives passing over the points where the transmitters are coupled to the rails, shunt out the carrier current to the receiver, thereby causing the siren to sound. The siren continues to sound until the circuit is reset by a push button, but as long as a train is in the protected zone the resetting of the device is impossible. In this manner the gang is protected against simultaneous train movements on adjacent tracks.

The device does not interfere with the normal track signal circuits, either alternating current or direct current, since the transmitters and receivers are coupled to the track through reactance tubes having a minimum impedance of 20,000 ohms. This impedance is said to prevent short-circuiting of the track signal circuits but to permit easy passage of the carrier frequencies. Insulated joints in the protected zone are shunted by means of condensers of the proper capacity, which permit passage of the carrier frequency current without affecting the signal circuits. In fact, numerous track tests of the Sentry signal, conducted under a wide variety of operating conditions, involving both alternating current and direct current signal circuits, are said to have shown that it does not, in either case, interfere with the normal operation of the track signal circuits.

The transmitters and receivers are assembled in small portable units which have weather-proof containers. It is said that no complicated instructions for operating the device are necessary. It is simply attached to the rails by means of flexible wire leads and terminal clamps, and only one minor adjustment is necessary, the entire device being controlled by one tumbler key switch which eliminates any possibility that it will be shut off inadvertently.

View of the Containers; for the Receiver Unit (Left) and the Battery and Siren of the New Q & C Track Sentry

Frisco Begins Bus Service

THE first two bus lines of the Frisco Transportation Company were inaugurated recently between Monett, Mo., and Springfield, 44 miles, and between Monett and Seneca, 43 miles. The Frisco Transportation Company is a wholly-owned subsidiary of the St. Louis-San Francisco, and was formed last year to provide auxiliary truck as well as bus service.

The new bus routes parallel the main line of the railway for some 85 miles on highway U. S. 60 from Springfield to the Missouri-Kansas state line. The equipment is modern and attractive, the buses being painted in ivory with black fenders, radiator shell and snubbers, and aluminum-colored top and wheels, with red striping on the bus body. The vehicles seat eight passengers, and also handle mail and express. The compartment for the latter is separated from the passenger section by a steel grill, and the buses are so constructed that the grill can be moved and additional seats added if they are required.

Attractive New Buses Are Used by the Frisco Transportation Company

NEWS

"Red Caps" Are R. R. Employees

I. C. C. will order carriers to so classify them under Railway Labor Act

"Red caps" and other station attendants with similar duties in passenger stations and other places on the carriers' premises and equipment in cities of over 100,000 population, based on the 1930 census, will hereafter be included within the term "employee" as used in the fifth paragraph of section 1 of the Railway Labor Act, according to a decision of Division 3 of the Interstate Commerce Commission. The commission's report, which follows in general the recommendations of Examiners Steer and Harris, which was reviewed in the *Railway Age* for February 26, page 396, points out that its order will include only those employees in cities of 100,000 population, but goes on to say that "However, there is no apparent reason why the work performed at smaller cities should be treated any differently."

The commission is of the belief that the "services of 'red caps' are usually engaged in much the same manner as are the services of respondents' employees generally, and 'red caps' are under the general and continuing authority of the station master or similar officer of substantially equal rank and their assistants to supervise and direct the manner of rendition of service. They are also subject to rules with respect to dress and manner of conduct and usually subject to reprimand and dismissal. Most companies have considered that they were employees in granting them free transportation. The facts with respect to 'red caps' show that they are employees within the generally accepted meaning of that term."

The report goes on to say that although the "red caps" are employees of the roads, yet it is the carriers' contention that they do not do work which may properly be defined as that of an employee or subordinate official. "We do no agree with this contention," says Division 3, "but are of the opinion that the work is of such a nature that it should be included in the commission's orders defining and classifying employees and subordinate officials."

The decision, which was written by Commissioner McManamy, concludes by finding that "that the work defined as that of an employee or subordinate official in the orders of the commission now in effect, should be, and it is hereby amended and interpreted so as to include the work of persons designated by terms such as 'red caps,' station attendants, parcel porter, usher, chief ushers, and captains, whose duties consist of or include the carrying of passengers' hand baggage and otherwise assisting passengers at passenger stations and other places on carriers' premises and equipment in cities of over 100,000 population, based on the 1930 census, whether such persons receive a stated compensation or are entirely dependent upon tips, and brings such persons within the term 'employee' as used in the fifth paragraph of section 1 of the Railway Labor Act, as amended."

N. I. T. Meeting at New York

The thirty-first annual meeting of the National Industrial Traffic League will be held at the Pennsylvania Hotel, New York, on November 17 and 18. At the annual League luncheon to be held on November 18, James F. Bell, chairman of the Board of Directors of General Mills, Inc., will be the guest speaker.

New York Railroad Club Supper Scheduled

The New York Railroad Club has announced that a buffet meal, at no charge to members, will be served before its meeting scheduled for October 28 in the Engineering Societies building, 33 West 39th street, New York, at 6:15 p. m. The program was announced in the *Railway Age* of October 1, page 492, as "Lumber Night."

Safety Congress Held at Chicago

The Silver Jubilee of the National Safety Council was held at Chicago on October 10-14 with the Steam Railroad Section meeting on the afternoons of October 11 and 13. The program this year included six major addresses and discussions. Fred W. Sargent, president of the Chicago & North Western, spoke on Hidden Causes, outlining the effect of mental and physical disorders on workmen. Robert S. Henry, assistant to the president of the Association of American Railroads, described the Importance of Safety in Public Relations. C. E. Hill, general safety agent of the New York Central, outlined the Railroads Part in Our Safety Program. G. H. Gibney, superintendent of car service employees of the Pullman Company, spoke on Passenger Courtesy and Its Relation to Safety. J. F. Doolan, operating assistant of the New York, New Haven & Hartford, spoke on the Locomotive and the Automobile. John E. Long, superintendent of safety of the Delaware & Hudson, outlined the Supervisor's Part in Accident Prevention.

A. A. R. To Test Passenger Locos

Mechanical Division will probe ultimate possibilities in extensive road tests

Road tests to determine the ultimate possibilities of present steam passenger locomotives will start at Fort Wayne, Indiana, on October 9, according to an announcement by the Association of American Railroads. This is part of a joint research project of railroads and locomotive builders looking to the further improvement of steam power.

A 1,000-ton experimental train, consisting of a dynamometer car, a baggage car and more than a dozen passenger coaches, will be run at full speed from Fort Wayne, Ind. to Valparaiso, a distance of approximately 115 miles. The instruments in the dynamometer car will record in permanent form not only the speed of the train but also the pull of the engine and a variety of other technically important data. Furnished by the Pennsylvania, the train will be operated under the supervision of a special committee of the Association's Mechanical Division.

Besides the representatives of the committee who will observe the operation in the dynamometer car, engineers of the steam locomotive builders will be present. Other observers will ride in a special housing on the pilot above the cylinders of the locomotive, where the steam pressure and additional information for a detailed analysis of the engine will be recorded on indicator cards.

Following this run on the Pennsylvania in Indiana, the same test train, with different locomotives, will be operated under similar conditions on the Chicago & North Western, west of Chicago, and on the Union Pacific near North Platte, Neb., during the week. Results of the tests will not be known, however, until the data recorded has been studied.

The research project of which these road tests are part was begun in 1937 by the Mechanical Division of the Association of American Railroads, which appointed a special committee to develop a reciprocating steam locomotive capable of handling 1,000 trailing tons at 100 miles per hour on level tangent track. To accomplish this, it was felt that from 5,000 to 5,500 cylinder horse power would be required. At that time, the group agreed as to the general lines along which such a locomotive should be developed, with reference to the boiler pressure, the

steam temperature, the factor of adhesion, etc.

D. S. Ellis, chief mechanical officer of the Chesapeake & Ohio, is chairman of the Committee on Further Development of Reciprocating Steam Locomotive. Other members of the committee are W. I. Cantley, mechanical engineer in the Mechanical division of the A. A. R.; W. R. Hedeman, assistant to chief motive power and equipment of the Baltimore & Ohio; J. E. Ennis, engineering assistant of the New York Central; W. R. Elsey, mechanical engineer of the Pennsylvania; J. M. Nicholson, acting mechanical superintendent of the Atchison, Topeka & Santa Fe; Lawford H. Fry, railway engineer of the Edgewater Steel Company; W. E. Woodard, vice-president of the Lima Locomotive Works; Harry Glaenzer, vice-president of the Baldwin Locomotive Works; J. B. Ennis, vice-president of the American Locomotive Company; E. G. Bailey, vice-president of the Babcock & Wilcox Company, and Edward C. Schmidt, professor of railway engineering at the University of Illinois.

Woodring Allots Funds for Rivers and Harbors Work

Secretary of War Harry H. Woodring has approved the following allotments of funds for the improvement of rivers and harbors: Thames River, Connecticut, $175,000; Cape Cod Canal, Massachusetts, $394,000; and Louisiana-Texas Intracoastal Waterway, New Orleans to Sabine River Section, $125,000.

Canadian Wharfage Tariff Withdrawn

A new top wharfage tariff filed by the Canadian Pacific and Canadian National and several water carriers, applying in Canadian ports, to have been effective October 1, has been withdrawn, pursuant to the appointment of a joint committee, under the chairmanship of W. E. Campbell, chief traffic officer, Board of Railway Commissioners, to examine the question of top wharfage fees.

Explosion on Finnish Road Kills 14

Fourteen persons were killed in a collision between a freight train and a passenger train on the Finnish State Railways near Wiborg, Finland, when a large tank of sulphur dioxide loaded on the freight train exploded and spread poisonous fumes over the wrecked cars. The engineman and fireman of the passenger train, who were pinned in the cab, were scalded by escaping steam but at the same time were saved from asphyxiation, since the steam freed the interior of poisonous gases.

Promotions in I. C. C. Bureau of Safety

Thomas C. Hays has retired as assistant director of the Interstate Commerce Commission's Bureau of Safety according to an announcement by the commission on October 10. Sydney R. White has been appointed assistant director to succeed Mr. Hays, and Francis C. MacDonald has been named to the post of chief of the section of safety appliances to succeed Mr. White. Elmer D. Rinehart has been appointed chief of the section of accident investigation to succeed Mr. MacDonald.

National Representation at P. R. R. Flower Show

Some 50,000 people attended a flower show staged by the Pennsylvania Railroad Garden Club in Philadelphia, Pa., recently. In addition to home employees of the railroad, off-line traffic representatives entered the show in the "long-distance" class. Employees of other railroads exhibited in the open class, the principal prize winners being employees of the Louisville & Nashville, Baltimore & Ohio, Reading and Lehigh Valley. Dozens of roses were forwarded by the Railway Express Agency's air express service from Portland, Ore.

Tablet Honors Casey Jones

A monument in memory of Casey Jones, the storied engineman who drove the Cannon Ball Express of the Illinois Central through three freight cars near Vaughn, Miss., on April 30, 1900, was dedicated on October 9 at Cayce, Ky., the town from which Casey received his nickname. Casey's real name is John Luther Jones, "Casey" being a nickname received in a railroad boarding house in Jackson, Tenn. Casey's widow and two granddaughters unveiled the marker, on which is mounted a bas-relief of the Cannon Ball, while Casey's fireman, Sim Webb, participated in the ceremonies.

Mid-West Board Meeting

A decrease of 5.1 per cent in carloadings during the fourth quarter of 1938 as compared with the same quarter of 1937 was forecast at the Fall meeting of the Mid-West Shippers Advisory Board at Des Moines, Iowa on October 6. Shipments of iron and steel products are expected to be 45 per cent less, those of ore and concentrates 70 per cent less, those of machinery 30 per cent less and those of agricultural implements 30 per cent less. While shipments of fresh fruits and vegetables will increase 17 per cent, lumber and forest products 7 per cent, live stock 10 per cent and potatoes 8 per cent. Special reports for grain products, implements and packing house products were featured at the meeting. These were synopses of the importance of each in the general economic development of the country. At a joint luncheon, Ralph Budd, president of the Chicago, Burlington & Quincy, discussed the railroad program.

Southern Pacific of Mexico Requests Wage Slash

The Southern Pacific of Mexico has requested authority from the Labor Department of Mexico to reduce salaries 15 to 25 per cent to restore the railroad to solvency. A committee of representatives of the Union of Mexican Railroad Workers is accompanying the general manager of the Southern Pacific on an inspection of the road and will later examine the accounts to endeavor to develop a solution of the problem. It is reported that if the Southern Pacific of Mexico is unable to maintain its solvency, the Workers Administration of the National Railways of Mexico may take over the operations of the lines. Walter Douglas, president of the railway, has recently obtained a loan of $150,000 for use in defraying the most urgent bills outstanding, particularly back pay of employees.

RFC and PWA to Finance Penn. Super-Highway

The Reconstruction Finance Corporation has announced that arrangements between the RFC, the Public Works Administration and the Pennsylvania Turnpike Commission have been completed covering the purchase by the RFC of $35,000,000 of 3¾ per cent 30 year Commonwealth of Pennsylvania Revenue Bonds, and a grant by PWA of $26,100,000. The proceeds of the loan and grant are to be used in the construction of a 162 mile four-lane superhighway with low grades and easy curves through the mountains from a point near Harrisburg to a point near Pittsburgh, using the partially-constructed roadbed of the old South Penn.

Would Not Exempt C., N. S. & M. From Railway Labor Act

Examiner Earl M. Steer of the Interstate Commerce Commission, in a proposed report on further hearing, would have the commission find that the Chicago, North Shore & Milwaukee does not fall within the terms of the exemption proviso in the first paragraph of section 1 of the Railway Labor Act, as amended June 21, 1934, nor the corresponding proviso in section 1(a) of the Railroad Retirement Act of 1937 and the Carriers Taxing Act of 1937. The Examiner would have the commission reverse its former decision of November 7, 1936, when it found that the company did fall within the terms of the exemption proviso of the Railway Labor Act.

"Fan" Trip

The Lackawanna and the Central of New Jersey will operate a circular railroad tour out of New York on Sunday, October 16, covering Delaware Water Gap, Pa., Scranton, Wilkes Barre, Phillipsburg, N. J., and Washington, N. J., 350 miles in all. The scheduled route is via the Delaware, Lackawanna & Western from Hoboken, N. J., to Phillipsburg, thence via the Central of New Jersey to Ashley, Pa., where an inspection will be made of the Ashley inclined Plane and Central of New Jersey motive power. Thence to the Scranton shops of the Delaware, Lackawanna & Western where inspection will be made of the shops and engine facilities located there. The party will then return to Hoboken via the Poconos, Delaware Water Gap and Dover.

Traffic Clubs to Meet at Cleveland

The seventeenth annual meeting of the Associated Traffic Clubs of America will be held at Cleveland, Ohio, on October 24-26. On the first day J. J. Pelley, president of the Association of American Railroads, will speak at a testimonial transportation luncheon sponsored by the Cleveland Chamber of Commerce. On the second day the

convention will be addressed by Thomas I. Parkinson, president of the Equitable Life Assurance Society; William M. Jeffers, president of the Union Pacific; Charles S. Belsterling, vice-president of the United States Steel Corporation, and William J. Cameron, of the Ford Motor Company. At the banquet on the second day C. Wayland Brooks, former senator from Illinois, will be the principal speaker. An open discussion of club activities will be held on the third day.

A. S. M. E. Elect 1939 Officers

The American Society of Mechanical Engineers elected the following new officers for 1939, who will assume office on December 9: President—A. G. Christie, professor of mechanical engineering, Johns Hopkins University, Baltimore, Md.; Vice-presidents—H. H. Snelling, Snelling & Hendricks, Washington, D. C.; W. L. Dudley, vice-president in charge of design and sales, Western Blower Company, Seattle, Wash.; A. Iddles, application engineer, Babcock & Wilcox Company, New York; James W. Parker, vice-president and chief engineer, Detroit Edison Company, Detroit, Mich.; Managers—C. Freeman, vice-president in charge of fire prevention engineering & underwriting, Manufacturers Mutual Fire Insurance Company, Providence, R. I.; William H. Winterrowd, vice-president, Franklin Railway Supply Company, Chicago, Ill.; W. R. Woolrich, dean of engineering, University of Texas, Austin, Tex.

Correction

The generator-equipped four-wheel truck used on new Hiawatha cars of the Chicago, Milwaukee, St. Paul & Pacific, as described on page 442 of the *Railway Age* of September 24, weighs 14,961 lb., or 952 lb. less than the 1936 truck which was incorrectly stated in the article to weigh 14,513 lb. The non-generator-equipped truck on the 1938 car weighs 13,709 lb., or 804 lb. less than the 1936 design.

Former Chairman of C. N. R. Trustees Dies in Winnipeg

Charles P. Fullerton who, as chairman of the board of trustees of the board of trustees of the Canadian National from January 1, 1934, until June, 1936, was the actual head of the executive organization of the road, died in Winnipeg, Man., on October 1, at the age of 68. Judge Fullerton's first connection with the railroad industry was as chief commissioner of the Dominion Board of Railway Commissioners, which post he held between 1931 and 1934. Previous to that he had a notable career in law and was a former member of the Manitoba Court of Appeals.

The Canadian National was placed under the direction of a three-man board of trustees in 1934 under Conservative party rule after the Duff Commission, in its probe of the Dominion's railway problems, recommended that the road be put into the hands of a board of trustees whose job it would be to effect co-operative economies with the Canadian Pacific. When the Liberal party was returned to power in 1935, opposition to this set-up grew apace and, in June, 1936, a bill was passed in both houses of Parliament which replaced the trustees by a board of seven directors.

Club Meetings

The Pacific Railway Club will hold its next meeting on October 27 at the Palace Hotel, San Francisco, Cal. Ranking executives of Pacific coast steam and electric railroads will present a series of talks entitled "The Railway Executives' Viewpoint." The date of the meeting has been changed from the regular meeting date to permit maximum attendance at the meeting of the Pacific Traffic Association, to be held on October 20 at the San Francisco Commercial Club. At the latter meeting, Paul Shoup, former vice-chairman of the executive committee, Southern Pacific, will be the principal speaker.

The next regular meeting of the Southwestern Car Service Association will be held on October 27, at the Adolphus hotel, Dallas, Texas.

The Railway Club of Pittsburgh will hold its annual meeting on October 27 at the Fort Pitt hotel, Pittsburgh, Pa., at 8 p. m. A dinner will precede the meeting at which election of officers will be held, followed by a smoker and program of entertainment.

Hiawatha Carries Million Passengers

A record of one million passengers in forty months was established by the Hiawatha, operated by the Chicago, Milwaukee, St. Paul & Pacific between Chicago and the Twin Cities, on October 6. Just prior to the train's departure from Chicago

Millionth Passenger On Hiawatha Awarded Traveling Bags

the millionth passenger, in the person of Dr. and Mrs. Lewis J. Pollock, of Chicago, were awarded traveling bags with accessories by F. N. Hicks, passenger traffic manager, in honor of the occasion.

The train was placed in service on May 29, 1935, and the patronage of the Hiawatha and its overflow sections has averaged more than 800 passengers daily. The gross earnings of the train in 1937 amounted to $3.90 a train mile, compared with $3.62 in 1936 and $3.23 for the seven months the train was in service in 1935. Its net revenue amounted to $2.63 in 1937, $2.46 in 1936 and $2.18 in 1935.

During the 39 months from June 1, 1935, to August 31, 1938, the total revenue of the train and extra sections, excluding that from dining cars, tap rooms and the North Woods Hiawatha, amounted to $4,371,450, or $3.739 per train mile. Expenses, including interest and depreciation, amounted to $1,442,015, or $1.233 per train mile. Net earnings amounted to $2,929,435, or $2.506 per train mile. This is an average annual return of $902,315, or 108 per cent, per year on an investment of $894,956, the cost of the two locomotives and 18 cars comprising the train, excluding all consideration of track maintenance expenses, taxes, solicitation and miscellaneous costs.

Accounting Officers Round-Table Conference

The next round-table conference of accounting officers members of the Accounting Division, Association of American Railroads, will be held at the Hotel Statler in St. Louis, Mo., on November 2. The announcement of the meeting points out that this will be the fifth of a series of such one-day conferences sponsored by the Association for the purpose of enabling the accounting officers to get together and informally discuss those problems of immediate concern to the profession.

Although no definite announcement has been made concerning the docket of subjects to be considered, it is expected that among the matters discussed will be (1) the administration of the Railroad Unemployment Insurance Act and (2) the Works Progress Administration project for the collection of service records of such employees as may be entitled to credits for service prior to January 1, 1937, in the computation of their annuities.

September Locomotive Shipments

September shipments of railroad locomotives, as reported by the country's principal manufacturing plants to the United States Department of Commerce, totaled three locomotives as compared with 20 in August and 41 in September, 1937. The nine months total was 222 as compared with last year's 349. The September figure included two steam locomotives and one Diesel-electric, all for domestic service, as compared with 26 steam and 14 Diesel-electrics for domestic service and one steam for export in September, 1937.

Unfilled orders at the end of September totaled 51 locomotives, including 16 steam, 20 electrics, and 14 Diesel-electric and one Diesel-electric for export; at the close of September, 1937, there were unfilled orders for 320 locomotives, including 206 steam, 26 electrics, 47 Diesel-electric for domestic service and 41 steam for export.

The data do not include locomotives built in railroad shops or "self-propelled cars of any kind."

Fire Association to Meet at Chicago

The annual meeting of the Railway Fire Protection Association will be held at the Palmer House, Chicago, on October 18

and 19, with a meeting of the Executive committee scheduled for October 17. The program this year provides for papers or informal talks on the Protection of Openings in Walls and Partitions, Air Conditioning, Fire Prevention Publicity, Salvaging Operations and Electrical Inspections, and round table discussions of Low Cost Effective Fire Brigades, Co-operative Fire Inspections, Fueling and Repair of Diesels, Developments in Alarm Signals, Hose and Nozzles, Control of Transient Fires, Fire Prevention Through Better Housekeeping, Enforcement of "No Smoking" Rule, Weed Spray Hazard, Fire Protection in Communication Plants and Portable Fuel Oil Furnaces. In addition, a section meeting will afford members an "off the record" opportunity to exchange experiences and discuss personal problems.

R. R. Supporters Plan Radio Program

Plans to broadcast one of its meetings, in the form of a round-table seminar, were discussed at the meeting of the New York Committee on Railroad Support, held recently, with queries and answers pertaining to current railroad problems. The purpose would be to indicate to the public that this is not a situation of interest solely to railroad managements, but that the public's funds are involved, through banks and insurance companies. To this end, it is planned to invite executives of such companies to participate, in order to present their case, as holders of the funds of their depositors which have been invested in rail securities. Broadcasting chains are reported to be interested in such a broadcast on a national hookup.

It also was proposed that the situation of the Rutland Railroad be emphasized, as an indication of what may face larger railroads, if constructive consideration of the railroads' problem is not accorded them by legislators.

Progress of similar committees in Detroit and Buffalo were presented at the meeting and efforts will be made to create similar committees in all important cities, wherever public-spirited individuals who are willing to organize such a group can be found.

Chicago Car Men Elect Officers

At the annual meeting of the Car Foremen's Association of Chicago, on Friday evening, October 7 at the LaSalle hotel, the following officers were elected for the ensuing year: president, P. B. Rogers, car shop superintendent, Atchison, Topeka & Santa Fe, Chicago; first vice-president, W. J. Healion, superintendent of shops, North American Car Corporation, Blue Island, Ill.; second vice-president, C. A. Erickson, general A. A. R. inspector, Chicago & North Western, Chicago; treasurer, C. J. Nelson, superintendent of interchange, Chicago Car Interchange Bureau, Chicago; secretary, G. K. Oliver, assistant passenger car foreman, Baltimore & Ohio Chicago Terminal, Chicago.

Retiring President F. A. Shoulty was elected to the board of directors which now comprises the following: Chairman, P. B. Rogers, Atchison, Topeka & Santa Fe; F. A. Shoulty, Chicago, Milwaukee, St. Paul & Pacific; F. L. Kartheiser, Chicago, Burlington & Quincy; William Hartnett, Chicago & North Western; W. A. Emerson, Elgin, Joliet & Eastern; J. S. Acworth, General American Transportation Corporation; C. W. Broo, New York, Chicago & St. Louis; C. O. Young, Illinois Central; F. R. Callahan, Pullman Company; R. R. Hawk, Wilson Car Lines; A. E. Smith, Union Tank Car Corporation; K. A. Milar, Milar & Company; and W. J. Demmert, Griffin Wheel Company.

Freight Car Loading

Loading of revenue freight for the week ended October 1 totaled 697,938 cars, an increase of 22,385 cars or 3.3 per cent above the preceding week, but a decrease of 145,923 cars or 17.3 per cent below the corresponding week in 1937 and a decrease of 252,725 cars or 26.6 per cent below the same week in 1930. All commodity classifications showed increases over the preceding week, while all commodity classifications except grain showed decreases under last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loadings

For Week Ended Saturday, October 1

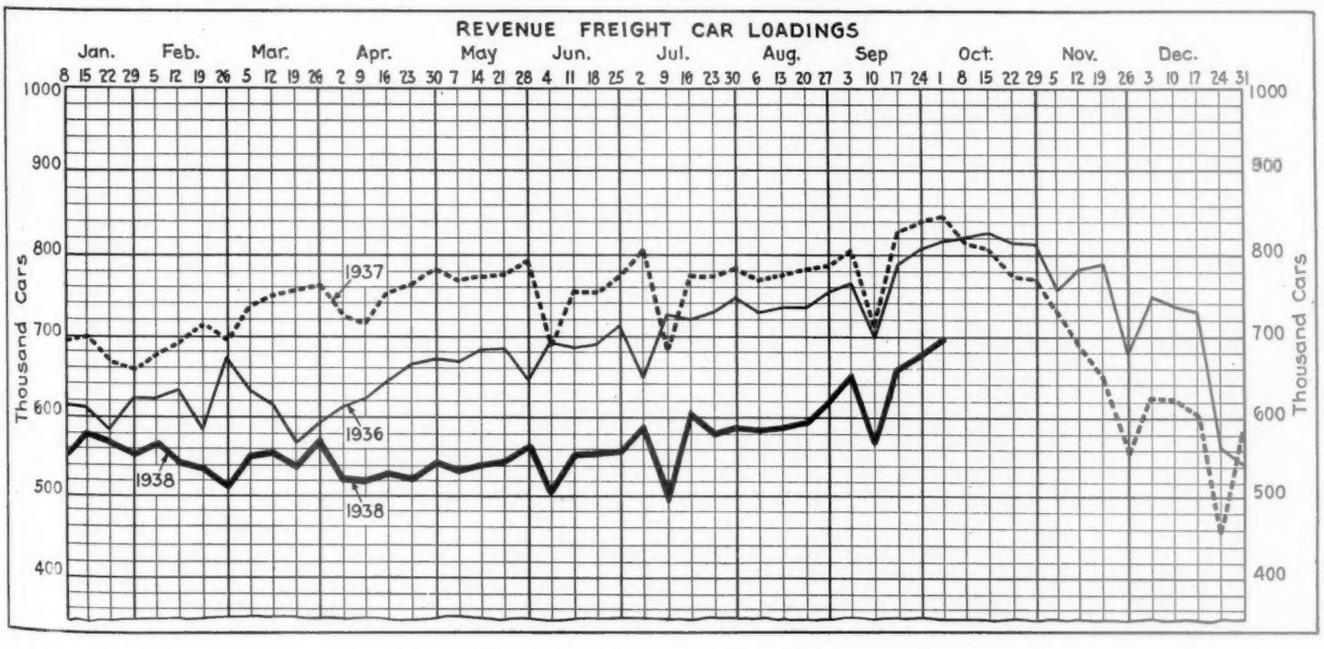
Districts	1938	1937	1936
Eastern	138,048	170,120	163,509
Allegheny	128,395	161,834	164,467
Pocahontas	51,249	56,931	56,377
Southern	106,316	118,168	114,622
Northwestern	102,095	135,722	134,852
Central Western	113,575	132,061	120,305
Southwestern	58,260	69,025	65,425
Total Western Districts	273,930	336,808	320,622
Total All Roads	697,938	843,861	819,597
Commodities			
Grain and Grain Products	41,589	36,314	31,869
Live Stock	17,216	21,791	20,519
Coal	131,789	163,848	158,467
Coke	6,408	10,304	10,616
Forest Products	32,487	38,418	34,772
Ore	29,184	62,299	57,865
Merchandise l.c.l.	158,576	174,695	172,924
Miscellaneous	280,689	336,192	332,565
October 1	697,938	843,861	819,597
September 24	675,553	836,885	807,243
September 17	660,142	822,795	789,857
September 10	568,887	708,202	700,147
September 3	648,039	801,539	765,131
Cumulative Total, 39 Weeks	22,145,799	29,145,950	26,459,304

In Canada.—In the October 1 week car loadings totaled 61,925, as compared with 62,330 a year ago and 60,812 in the preceding week, according to the statement of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
Oct. 1, 1938	61,925	25,605
Sept. 24, 1938	60,812	18,870
Sept. 17, 1938	56,609	20,298
Oct. 2, 1937	62,330	26,155
Cumulative Totals for Canada:		
Oct. 1, 1938	1,784,584	790,626
Oct. 2, 1937	1,949,387	1,033,411
Sept. 26, 1936	1,789,022	892,331

Rock Island to Buy Truck Line

The Chicago, Rock Island & Pacific was authorized by the Federal District Court at Chicago on October 7, to purchase for not more than $4,500, the motor vehicle service of the Clark Transportation Company, operated between Kansas City, Mo.,



and Des Moines, Iowa, subject to the approval of the Interstate Commerce Commission. The new line will form a connection at Des Moines, Iowa, with the route over which the Rock Island Motor Transport Company operates east to Chicago, west to Omaha, Neb., and north to the Twin Cities, while at Kansas City the new route will connect with the motor carrier route of the Rock Island extending to St. Joseph, Mo., as well as proposed routes extending to Leavenworth, Kan., Atchison and Topeka. At the latter point connections will be made with a proposed route leading north to Horton and southwest to Herington, Hutchinson and Dodge City. Permission to operate proposed routes is being sought from the Interstate Commerce Commission.

At the same time, the court authorized the Rock Island Motor Transit Company to establish service by motor vehicle upon public highways between Blue Island, Ill., and Joliet, as auxiliary and supplementary to its rail service.

Oral Argument Heard in Penn. Coal Case

Oral argument in the case of the attempt by anthracite carriers to force the State of Pennsylvania to raise intrastate rates on anthracite to the level prescribed by the Interstate Commerce Commission in Ex Parte 123 for interstate shipments was held before the Interstate Commerce Commission on October 7. The Pennsylvania Public Utility Commission has refused to allow the eastern roads which handle anthracite to put into effect intrastate rates equal to the interstate rates prescribed by the commission. The carriers contend that the action of the Pennsylvania commission prejudices the interstate rates on anthracite in that the intrastate rates will not bear a fair share of the total cost of transportation.

W. I. Woodcock, general counsel for the Reading, told the commission that 20 per cent of the carriers' total anthracite traffic would be affected if the increased rates were not allowed. He also pointed out that the effect of the increased interstate rates has been to close interstate routes for anthracite and divert it to intrastate routes. He did not think that the commission would allow Pennsylvania to disrupt old and established routes by refusing to allow increased intrastate rates. The Reading general counsel also predicted that the result of Pennsylvania's action will be to close interstate routes to Philadelphia.

C. & O. to Hold Public Relations Conference

The Chesapeake & Ohio will hold its eighth annual Public Relations Conference on October 21 and 22, at the Greenbrier, White Sulphur Springs, W. Va., H. P. Henshaw, assistant vice-president, presiding. Principal speakers at the first session and the subject of their talks will be: G. D. Brooke, president, Chesapeake & Ohio, who will talk on railway matters; Merle Thorpe, editor and publisher, "Nation's Business," to speak on "The Public's Stake in the Railroads;" and Frederick Bramley, secretary, Canadian Pacific, to discuss "Railway Developments in Canada."

The program of the afternoon session comprises the following speakers:

J. H. Day, vice-president (traffic), Nickel Plate, to speak on "Good Will;" Judge R. V. Fletcher, vice-president and general counsel, Association of American Railroads, to present the "Program for the Solution of the Transportation Problem—as proposed by the railroads," with a general discussion following, led by A. T. Lowmaster, vice-president and general manager, Chesapeake & Ohio, and W. C. Hull, vice-president (traffic), Chesapeake & Ohio and Pere Marquette.

Fitzgerald Hall, president, Nashville, Chattanooga & St. Louis, will speak at the banquet in the evening. At the morning session on the morning of October 22, "Public Relations—and Loyalties," "Public Relations—Facing the Facts," "Public Relations—Legislative Aspects," and "Public Relations, The Employee's Obligation," will be presented by George A. Kelly, vice-president, Pullman Company, J. M. Fitzgerald, vice-chairman, Eastern Presidents' Conference, John C. Shields, general solicitor, Pere Marquette, and C. A. Radford, publicity manager, the Big Four, respectively.

From 500 to 600 representatives of the Chesapeake & Ohio, Pere Marquette and Nickel Plate roads will attend the conference, including the public relations committees, members of the Chesapeake & Ohio Lines Magazine staff and officers of the three railroads. Members of the legal staff of the lines, who are holding a session at The Greenbrier on October 20, will remain over to attend the proceedings.

P. W. A. Grant to Aid Joint Highway-Railroad Bridge

A bridge to be used jointly by Boston & Maine trains and general highway traffic between Portsmouth, N. H., and Kittery, Maine, to be built at an estimated cost of $2,909,090, will be aided by a P. W. A. grant of $1,309,090, recently approved by President Roosevelt, according to an announcement made by Public Works Administrator Harold L. Ickes. At the same time, on October 4, Jesse H. Jones, chairman of the Reconstruction Finance Corporation, which is handling the loan portion of the project, announced that the corporation had approved a loan of $1,600,000 to the Maine-New Hampshire Interstate Bridge Authority for the construction of the vehicular and railroad bridge.

The plans provide for the construction of a steel bridge, including approaches across the Piscataqua river. The bridge will include a vertical lift, and is part of a project which will be approximately five and a half miles long. The project will be made up of two and a half miles of four-lane, and one mile of two-lane highway in New Hampshire, about one-quarter of a mile of bridge structure, and one and a half miles of three-lane highway in Maine with a connection to U. S. Route No. 1. According to the application, the present highway bridge located between Portsmouth and Kittery is unable to meet the present traffic requirements, and the old wooden highway bridge, about one mile north of the present highway bridge has been condemned for vehicular traffic, and is inadequate for railroad service. The proposed bridge will correct these conditions and will meet the highway and railroad traffic requirements at these locations.

U. S. Supreme Court Orders

Several cases on appeal involving railroads were acted upon by the United States Supreme Court on October 10 when that tribunal began its October term after the Summer's recess. The court noted probable jurisdiction in the case of the Baltimore & Ohio v. the United States, agreeing to consider the validity of the Interstate Commerce Commission's order requiring seven railroads to cease providing warehouse space at less than cost in the New York harbor district. Besides the B. & O., roads joining in the appeal were the Erie, Delaware, Lackawanna & Western, Lehigh Valley, New York Central, Central of New Jersey and the Pennsylvania.

The Supreme Court also agreed to consider an appeal by the Inland Steel Company from a three-judge federal court decision which allowed the Indiana Harbor Belt to keep car switching allowances accrued before the effective date of an Interstate Commerce Commission order abolishing such payments to the steel company.

The court postponed jurisdiction in the case of the Alton v. the Illinois Commerce Commission in which the Illinois Supreme Court had held that the Illinois commission had authority to compel the Alton to maintain a switch track built for private industrial purposes upon property owned by industries, since such track, crossing public thoroughfares, became a part of the main line of the railroad.

The government was granted a review of the action of the Federal District Court for the Eastern District of Pennsylvania in dismissing on jurisdictional grounds the government's case against the Pennsylvania for alleged rebating. The ruling of the lower court was that the rebate had been paid to a grape shipper in New York and that prosecution for violation of the Elkins Act should be conducted in New York. The government sought prosecution in eastern Pennsylvania.

The court also denied certiorari in three cases involving the interpretation of the Federal Employers' Liability Act. These cases were the Wabash v. Bridal, Missouri Pacific v. Graves, and Harris v. the MOP.

In another case of the Kansas City Southern v. the I. C. C., the court denied a review of a lower federal court's decision that mandamus will not lie to compel the commission to hear and determine a complaint involving rentals charged by a terminal company.

I. C. C. Practitioners Meet in Pittsburgh

A resolution opposing the passage of all legislation barring non-lawyers before regulatory bodies of states and the federal government as inimical to the best interests of the association and to the proper administration of the Interstate Commerce Act was adopted by the Association of

Practitioners before the Interstate Commerce Commission at its ninth annual meeting on October 6 and 7 at Pittsburgh, Pa. Action was taken by the Association when lawyer members demanded a quick vote on the resolution as a means of showing that they were not opposed to non-lawyer members appearing before the Commission and similar bodies. The question arose as a result of recent attempts by national and state bar associations, in an effort to reform the administrative process of the government, to limit practice before the Commission to lawyers.

Officers elected at the meeting are president, Clarence A. Miller, general counsel of the American Short Line Railroad Association; vice-president, official classification territory, H. D. Rhodehouse, general traffic manager of the Republic Steel Company; vice-president, southern classification territory, W. L. Grubbs, commerce attorney of the Louisville & Nashville; vice-president western classification territory, William E. Rosenbaum, St. Louis, Mo.; chairman, executive committee, Wilbur LaRoe, Jr., Washington, D. C.; secretary, Milton P. Bauman, re-elected, New York, N. Y., and treasurer Charles E. Bell, re-elected, Washington, D. C.

James William Moore, associate professor of law at Yale University, spoke on the new federal rules of civil procedure in federal district and circuits courts. Bon Geaslin, general counsel of the Maritime Commission, spoke on the peace time functions of the government's maritime agencies. Commissioner Clyde B. Aitchison of the I. C. C. defended the administrative agencies of the federal government in an address on Reforming the Administrative Process.

Cardenas Reports on the National Railways of Mexico

In his annual report to the Mexican Congress on September 1, President Cardenas stated that "the creation of the Worker's Administration of the National Railways of Mexico has, within the short period of a month, reduced considerably the operating costs of the system, improving at the same time its organization and financial standing. The Administration has already paid obligations in foreign countries to the amount of $7,019,376 (Mex.); has paid $3,589,049 for local obligations acquired by the former Autonomous Department of Railroads and is satisfactorily complying with its fiscal obligations with the Federal Government, to which it has delivered up to date the sum of $1,956,699 to cover taxes, and is serving the public with the greatest efficiency."

Air Travel in the Americas

Air services available to travelers now extend a total of 141,000 miles in the western hemisphere. This is 44 per cent of the combined lengths of all the world's scheduled air services. It compares with some 30,000 miles of scheduled air services scattered throughout the Americas in 1928 and is equal to the world's total mileage 10 years ago, according to Irving H. Taylor, chief of the Automotive-Aeronautics Trade Division, Department of Commerce.

A large amount of flying is involved for the 85 air lines offering the 350 scheduled air services in the western hemisphere, says Mr. Taylor. These lines employ about 825 airplanes which are rolling up a flying average of 249,000 miles a day or 91,000,000 miles a year. They are expected to carry 1,900,000 passengers this year. The volume of mail is expected to reach 25,000,000 lbs. and it is believed the combined loads of air express will total 20,000,000 lbs.

Bridge and Building Convention

The American Railway Bridge and Building Association will hold its forty-fifth annual convention at the Hotel Stevens, Chicago, on October 18-20. The program is as follows:

TUESDAY, OCTOBER 18

Morning Session, 10 A. M.

Convention called to order.
Greetings from other associations.
Address by C. Miles Burpee, President (research engineer, D. & H., Albany, N. Y.).
Report of Committee on Meeting Today's Demands with Cranes and Pile Drivers; O. W. Stephens, chairman (track supervisor, D. & H., Oneonta, N. Y.).

Afternoon Session

Report of Committee on Recent Development in Field Methods in the Construction of Timber Trestles; A. S. Krefting, chairman (assistant engineer, M. St. P. & S. S. M., Minneapolis, Minn.).
Address on Lessons to Be Learned from Recent Bridge Failures, by R. A. Van Ness, bridge engineer, A. T. & S. F. System, Chicago.
Report of Committee on the Maintenance of Movable Bridges; A. E. Bechtelheimer, chairman (assistant bridge engineer, C. & N. W., Chicago).

Tuesday Evening

Moving pictures showing the Bethlehem Steel Corporation's film illustrating the Golden Gate Bridge and Johns-Manville Sales Corporation's film on heat and its control.

WEDNESDAY, OCTOBER 19

Morning Session

Report of Committee on Pipe Lines for Railway Water Service; R. E. Dove, chairman (assistant engineer, C. M. St. P. & P., Chicago).
Address on Safety in These Days of Reduced Forces, by J. E. Long, superintendent of safety, D. & H., Albany, N. Y.
Report of Committee on the Maintenance of Cinder Pits; C. A. J. Richards, chairman (master carpenter, Penna., Chicago).
Luncheon—Address by Samuel H. Cady, vice-president and general counsel, C. & N. W., Chicago.

Afternoon Session

Report of Committee on the Insulation of Railway Buildings; N. D. Howard, chairman (managing editor, *Railway Engineering and Maintenance*, Chicago).
Address on Current Trends in the Design of Railway Buildings, by L. P. Kimball, engineer of buildings, B. & O., Baltimore, Md.
Report of Committee on the Inspection and Preparation of Wood Surfaces for Painting; T. D. Saunders, chairman (assistant division engineer, C. N. R., Toronto, Ont.).

Wednesday Evening

Annual Dinner.

THURSDAY, OCTOBER 20

Morning Session

Report of Committee on the Possibilities and Limitations of the Acetylene Cutting Torch; J. L. Varker, chairman (bridge and building supervisor, D. & H., Carbondale, Pa.).
Business Session.

Thursday Afternoon

Inspection of the Underwriters' Laboratory to witness demonstrations of fire tests and observe measures to reduce hazards of fire and personal injury in industry.

Supply Trade

Yale D. Hills has been appointed manager of distributor sales for the **Service-sales Division** of **The Timken Roller Bearing Company.** Mr. Hills' headquarters are at the main Timken factory at Canton, Ohio. For several years he has been manager of the Los Angeles, Cal., territory branch of the company.

Frank J. Carr, assistant to president of the **American Steel & Wire Co.,** Cleveland, Ohio, subsidiary of the **United States Steel Corporation,** has been appointed comptroller of the company. Mr. Carr has been with the American Steel & Wire Co., since last March and in the four preceding years he was comptroller of the Tennessee Valley Authority, at Knoxville, Tenn. He was born at Batavia, Ill., in 1892, and attended public schools there and in Aurora, before going to the Wharton School of Finance at the University of Pennsylvania. Mr. Carr was graduated in 1915 with a degree of B.S. in Economics. During the World War he was a lieutenant in the Ordnance Department of the United States Army.

TRADE PUBLICATION

ARMCO TUNNELS—The use of Armco structural steel plate linings in the construction of tunnels, shafts, caissons and conduits is explained in a 16-page attractively-illustrated Bulletin No. 238 published by the Ingot Iron Railway Products Company, Middletown, Ohio. The bulletin is illustrated with pictures of Armco structural steel plate lining in tunnels, sewers and mine shafts. Two pages are devoted to an explanation of why corrugated plate has a much greater strength than flat plate, and tables are shown listing the properties and weights of the various Armco structural plate linings.

Equipment and Supplies

Locomotive Specialties

Within the past two months the Locomotive Firebox Company, Chicago, has received orders for 138 thermic syphons to be applied to 69 steam locomotives on foreign railways as follows: South Austrian Government Railways, 20 syphons; Gengal Nagpur India, 10 syphons; Norwegian State Railways, 8 syphons; and Argentine State Railways, 10 syphons.

FREIGHT CARS

THE SOUTHERN RAILWAY has under consideration the question of purchasing additional freight cars, practically on the same terms as the 5,704 freight cars recently purchased through the R.F.C., trust E.E.

THE UNITED STATES NAVY DEPARTMENT, BUREAU OF SUPPLIES AND ACCOUNTS, Washington, D. C., will receive bids, November 1, for 39 flat cars of 50 tons' capacity, 3 flat cars of 36 in. gage and 60 tons' capacity and 4 steel box cars, 46 ft. 6 in. long of 50 tons' capacity. These cars are for service at various navy yards.

PASSENGER CARS

THE SOUTHERN RAILWAY is inquiring for prices on October 24, for 20 steel baggage and express cars, 70 ft. long.

SIGNALING

WINSTON-SALEM SOUTHBOUND. — The date for receiving sealed proposals by this road has been extended to October 31 for furnishing the necessary materials for the installation of a flashing light highway crossing signal at Southmont, N. C. See item in the *Railway Age* of October 8, page 537.

PENNSYLVANIA.—Sealed proposals will be received at the office of E. J. Lamneck, purchasing agent of this road, 15 North 32nd Street, Philadelphia, Pa., until 12:00 noon (e.s.t.) October 18, for the furnishing of signal materials to be used in connection with two federal aid grade crossing protection projects in the State of Illinois.

INTERBOROUGH RAPID TRANSIT COMPANY.—The Transit Commission of New York has ordered the Interborough Rapid Transit Company to install a continuous system of automatic block signals and train stopping devices on the local tracks of the Second, Third and Ninth avenue elevated lines of the Manhattan Railway Company, in New York City. The work on certain sections is to be started at once and all of the work is to be completed by December, 1943.

Construction

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract amounting to $433,187 has been awarded the Ready Coal & Construction Company, Chicago, by the Board of Local Improvements of that city for the construction of the substructure of a subway which will carry 43 tracks of this road over Austin avenue. The subway is a 46-ft. I-beam span structure 658 ft. long, with reinforced concrete abutments which are supported on creosoted piling. The bridge will have a ballast deck on a wrought iron floor.

ILLINOIS CENTRAL.—A contract amounting to $57,793 has been awarded W. R. Aldrich & Company, Baton Rouge, La., for the construction of a bridge to carry the line of the Yazoo & Mississippi Valley (part of the Illinois Central System) over the East approach of the highway leading to the Mississippi River bridge. The bridge will be a concrete and steel structure 260 ft. long on concrete pile bents and concrete piers, supported by concrete foundation piling.

LONG ISLAND.—The Transit Commission of New York has approved the enlarged plan for the elimination of about 20 grade crossings on the Long Island Railroad along Atlantic avenue in Brooklyn and Queens, New York City. The total length of the improvement is about five miles. The enlarged plan calls for a two-track railroad underground, instead of at grade or elevated, at an estimated cost of $23,000,000. See *Railway Age* of June 25, 1938, page 1066.

PENNSYLVANIA.—The Pennsylvania Public Utility Commission has ordered the reconstruction of a highway bridge connecting two parts of Bridge street in the City of Pittsburgh, Pa., with its approaches extending from East Ohio street, Pittsburgh, over the tracks of the Pennsylvania and the Baltimore & Ohio, over the back channel of the Allegheny river and over the tracks of the Pittsburgh Joint Stock Yards Company on Herrs Island, to the ground level of Bridge street on that island.

UNION PACIFIC.—This road is constructing with its own forces six new reinforced concrete platforms, four of which will have steel frame umbrella sheds over their entire length, at the new railway mail terminal depot at Council Bluffs, Iowa. Two of the covered runways, which will be jointly owned and operated by the Union Pacific and the Chicago, Burlington & Quincy, are 720 ft. and 580 ft. long. A third covered runway 260 ft. long will be owned by the Chicago & North Western, and the fourth, a runway and trainshed 160 ft. long, will be owned by the Chicago, Rock Island & Pacific. The two open platforms will be 40 ft. and 130 ft. long; the former to be used by the Union Pacific as a repair dock, and the latter to be owned by the Chicago, Milwaukee, St. Paul & Pacific.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon a branch line extending from Havana, Kans., to Cedar Vale, 38.7 miles.

CENTRAL OF GEORGIA.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized the receiver to abandon a portion of a branch line extending from Metter, Ga., to Brewton, 47.4 miles.

CHICAGO, BURLINGTON & QUINCY.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a line extending from Shenandoah, Iowa, to Norwich, 5.6 miles.

CLINTON, DAVENPORT & MUSCATINE.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon a line extending from Davenport, Iowa, in a westerly and southerly direction to Muscatine, 27.3 miles.

COEUR D'ALENE & PEND D'OREILLE-SPOKANE INTERNATIONAL. — *Abandonment.* — Examiner Jerome K. Lyle of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize the trustees of these companies to abandon the operation of a line extending from Corbin Junction, Idaho, to Bayview, 11.6 miles.

ERIE.—*Reorganization.* — The Interstate Commerce Commission, Division 4, has authorized Gardner B. Perry, Paul S. Blair, C. Shelby Carter, Ferd I. Collins, N. S. Hall, and W. H. R. Unger to serve as a protective committee for holders of this company's refunding and improvement mortgage five per cent bonds in accordance with the terms of a deposit agreement during reorganization proceedings of this company under Section 77 of the Bankruptcy Act.

FOX & ILLINOIS UNION.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized the receiver to abandon the entire line extending from Morris, Ill., to Yorkville, 20 miles.

MINNEAPOLIS & ST. LOUIS.—*Certificates of Indebtedness.*—The receivers have applied to the Interstate Commerce Commission for authority to issue $550,000 of four per cent receivers' certificates of indebtedness in renewal of an obligation for a like amount now outstanding.

MISSOURI SOUTHERN.—*Bonds.*—The Interstate Commerce Commission, Division 4, has authorized this company to issue $125,000 of first mortgage gold bonds, bearing interest from August 15, 1938, at the reduced rate of three per cent per annum, to be delivered to certain guarantors at approximately 85.27 per cent of par in connection with the discharge of matured and maturing obligations totaling $106,592.

MISSOURI PACIFIC.—*Delisting of N. O.,*

Continued on next left-hand page

T. & M. Stock.—The Securities and Exchange Commission has granted the New York Stock Exchange authority to strike from listing and registration the $100 par value capital stock of the New Orleans, Texas & Mexico. The commission announcement pointed out that the delisting was sought, among other things, because the shares were included in the proposed reorganization plans for the Missouri Pacific.

MONTOUR.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon its so-called Moon Run branch extending from Groveton, Pa., to Moon Run, 5.6 miles.

NEW YORK, CHICAGO & ST. LOUIS.—*Note extension.*—This road has applied to the New York Stock Exchange for a listing of its new three-year 6 per cent notes dated October 1, 1938 and due October 1, 1941, which have been given to holders of deposit receipts for present three-year 6 per cent notes under a plan and deposit agreement dated July 23 and declared operative on October 4. A letter to holders of both notes and deposit receipts states that $12,456,250 of the present notes have been deposited under the note extension plan, while approximately $2,400,000 of the notes still remain undeposited. Checks for interest due October 1, 1938, on the deposited notes have been mailed to holders of deposit receipts of record October 6, 1938.

NEW YORK, NEW HAVEN & HARTFORD.—*Abandonment by the Old Colony.*—The trustees of the New York, New Haven & Hartford have asked the Interstate Commerce Commission for authority to abandon the operation and the trustees of the Old Colony have asked for authority to abandon the line extending from North Carver, Mass., to Middleboro, 7.6 miles.

NEW YORK, NEW HAVEN & HARTFORD.—*Transit subsidiary reorganization.*—The reorganization plan of the Connecticut Company, a wholly-owned subsidiary of this road operating street railway and motor bus lines in Connecticut, has been approved by the Massachusetts Public Utilities Commission and filed with the U. S. District Court for approval by Judge Hincks. The plan provides for reduction of the company's capital from $40,000,000 to $7,100,000, comprising a reduction of capital stock from $19,877,000 to $2,100,000, and a slash of funded debt from $20,123,000 to $5,000,000. The plan also calls for cancellation of $2,978,023 of demand notes now held by the New Haven. Under the plan, trustees of the latter will surrender the entire capital stock and bond issue of the subsidiary now held by the road. In place of these they will receive $5,000,000 par value fixed interest bonds, $2,000,000 par value class A stock, $100,000 no par class B stock and $1,000,000 in cash.

NORFOLK SOUTHERN-ATLANTIC & NORTH CAROLINA.—*Joint Operation.*—The Norfolk Southern's receiver and the Atlantic & North Carolina have asked the Interstate Commerce Commission for authority to use each other's tracks in New Bern, N. C.

SEABOARD AIR LINE.—*Equipment Trust Certificates.*—The Interstate Commerce Commission, Division 4, has authorized the receivers to assume liability for $163,500 of four per cent equipment trust certificates, to be issued by the Guaranty Trust Company of New York, as trustee, and sold or delivered at par and accrued dividends to the Electro-Motive Corporation in connection with the procurement of certain equipment.

Commissioner Porter wrote a short dissent in which he criticized his colleagues for authorizing equipment trust certificates for the full amount of the purchase of equipment, instead of for the usual 75 per cent or less. After citing the fact that out of the various kinds of railroads securities once available for new financing only the equipment trust certificate is still saleable, Commissioner Porter points out that "For the first time in the issuance of such securities the majority here propose to permit the issuance of equipment trust certificates for the entire amount of the purchase price. Every dollar of value of the property is thus represented by debt and there is no equity over and above the amount of the debt. Heretofore in this case, we have gone entirely too far perhaps, in authorizing 90 per cent of the value of the property purchased to be represented by trust certificates, and now the majority would authorize the issuance of trust certificates for the remaining 10 per cent. While it is true these certificates are to be taken by the manufacturer of the property, yet there is nothing to prevent these certificates from finding their way into the general market and should disaster come to this railroad company, a cloud will be created on all of this present high-class of railroad securities, to the injury of every railroad in the country. This is to be permitted for a company already in receivership and heavily overburdened with debt."

ST. LOUIS-SAN FRANCISCO.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized the trustees to abandon (1) that portion of the Hunter branch, extending westerly and southwesterly from Williamsville, Mo., to Hunter, 21.3 miles; (2) that portion of the Current River branch, extending northerly and northwesterly from Hunter, Mo., to Chicopee, 13.2 miles; and (3) the entire line known as the Grandin branch, extending southerly from Hunter, Mo., to Grandin, 6.1 miles.

ST. LOUIS SOUTHWESTERN.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized the trustee to abandon a branch line extending from Wyatt, Mo., to Birds Point, 5.3 miles.

SOUTHERN PACIFIC.—*Abandonment.*—This company has asked the Interstate Commerce Commission for authority to abandon a branch line extending from Narlon, Calif., to Gray, four miles.

SOUTHERN PACIFIC.—*Operation by the Interurban Electric.*—The Interurban Electric, a subsidiary of the Southern Pacific, has asked the Interstate Commerce Commission for authority to operate interurban electric railway service over certain lines of the Southern Pacific and that line in the course of construction by the California Toll Bridge Authority across the San Francisco-Oakland bridge. The operations will total 40 miles and will be located in the San Francisco Bay area.

SOUTHERN PACIFIC.—*Bonds.*—The Interstate Commerce Commission, Division 4, has authorized the Southern Pacific Railroad Company to issue $7,251,000 of first refunding mortgage gold bonds, to be sold to the Southern Pacific Company at par and accrued interest, and the proceeds applied to the payment of maturing obligations and in reimbursement of the treasury for expenditures made for capital purposes. The commission has also granted authority to the Southern Pacific Company to assume liability as guarantor, for the bonds and to pledge and repledge them to and including December 31, 1940, as collateral security for any short-term notes which it may issue. The bonds are to be dated as of January 3, 1905, but any registered bonds which may be issued in exchange for the coupon bonds will be dated as of the date of issue, will bear interest at the rate of four per cent per year, and will mature on January 1, 1955.

UNION PACIFIC.—*Abandonment and Construction.*—The Interstate Commerce Commission, Division 4, has authorized this company and its subsidiary, the Los Angeles & Salt Lake, (1) to abandon 2.5 miles of the Glendale branch in Los Angeles County, Calif.; (2) to operate under trackage rights over a line of the Southern Pacific for 2.7 miles of double track main line along the east bank of the Los Angeles River in Los Angeles County, Calif.; (3) to construct and operate a track approximately 1,345 feet in length at mile post 5.26 connecting their own tracks at that point with those of the Southern Pacific; and (4) to construct a track approximately 390 feet in length connecting the Southern Pacific's spur serving the Taylor Milling Company with the Union Pacific spur serving the same territory.

WESTERN MARYLAND.—*Operation.*—The Interstate Commerce Commission, Division 4, has authorized this company to operate, under trackage rights, over a line of the Cumberland & Pennsylvania between Westernport, Md., and Lonaconing Junction, 10.2 miles.

WILKES-BARRE & EASTERN.—*Abandonment.*—Examiner J. S. Prichard of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize the trustee to abandon that portion of the company's line extending from Suscon, Pa., to Stroudsburg, 54 miles.

Dividends Declared

Piedmont & Northern.—35c, payable October 20 to holders of record October 5.

Providence & Worcester (Interim).—$1.25, payable October 15 to holders of record October 5.

Average Prices of Stocks and Bonds

	Oct. 11	Last week	Last year
Average price of 20 representative railway stocks..	30.77	28.03	35.11
Average price of 20 representative railway bonds..	60.28	59.73	71.93

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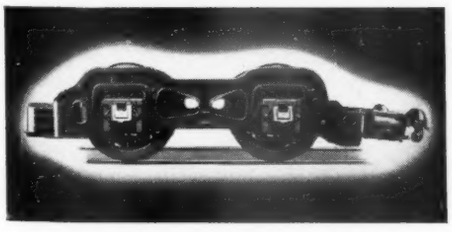
A "BOOST" when the going is tough

Horses can keep the wagons rolling once they are out of the rough... but when the going is tough, elephants are used to give the needed "boost" to start them off. » » » Locomotives, too, need that added "boost" in starting and in taking the tough grades. The Locomotive Booster, by capitalizing what would otherwise be an idle trailer, supplies the extra power that facilitates smooth, quick starting and enables you to reach road-speed quickly and without discomfort to passengers. » » » Reduce the top-speed of your run, and maintain your schedules... Incorporate the Locomotive Booster to help you in any tight place.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Railway Officers

EXECUTIVE

L. L. White has been appointed vice-president of the Erie, with headquarters at Cleveland, Ohio, having supervision over purchases and development.

Merrill E. Shoup, formerly in charge of legal matters for the Midland Terminal, Colorado Springs, Col., was elected president September 20, succeeding **Leslie G. Carlton,** whose death, on September 4, is announced elsewhere in these columns.

OPERATING

D. P. Webster, yardmaster on the Atchison, Topeka & Santa Fe, at Kansas City, Mo., has been promoted to trainmaster of the Chicago terminals, with headquarters at Chicago, succeeding **Charles W. Philhour,** whose promotion to superintendent of the Chicago terminals was announced in the *Railway Age* of September 10.

TRAFFIC

J. R. Dryer, traveling freight agent on the Baltimore & Ohio and the Alton, with headquarters at Chicago, has been promoted to dairy freight agent, with the same headquarters, relieving **M. J. Allen,** who retired October 1.

G. C. Poole, division freight agent of the Seaboard Air Line, has been appointed assistant general freight agent, with headquarters at Raleigh, N. C. The position of division freight agent has been abolished.

J. D. Dawson has been appointed general eastern freight agent of the Seaboard Air Line, with headquarters at New York, succeeding **B. F. Black,** who has retired because of ill health, after 42 years of service with this road.

M. E. Ross, traveling coal traffic agent on the Chesapeake & Ohio, has been promoted to coal traffic agent, with headquarters at Toledo, Ohio, succeeding **Thomas V. Bush,** whose promotion to New England coal traffic agent, with headquarters at Boston, Mass., was reported in the *Railway Age* of October 8.

Fred H. Rowe, chief clerk in the freight department of the Grand Trunk Western at Detroit, Mich., has been promoted to general agent, freight department, at Detroit, succeeding **George O. Thoreson,** whose transfer to St. Louis, Mo., was reported in the *Railway Age* of October 8.

Subsequent to the retirement on October 1 of **James E. Weller,** traffic manager of the Pennsylvania, with headquarters at Chicago, which was announced in the *Railway Age* of that date, **Raymond J. Wood,** general freight agent, with headquarters at Chicago, has been promoted to western freight traffic manager, with the same headquarters, **C. B. Sudborough,** assistant vice-president with headquarters at St. Louis, Mo., has been appointed

James E. Weller

southwestern freight traffic manager, with the same headquarters and **I. T. Marine,** division freight agent, with headquarters at Youngstown, Ohio, has been advanced to general western freight agent, with headquarters at Chicago. **C. J. Lindquist,** division freight agent on special duty at Philadelphia, Pa., has been transferred to Youngstown, to succeed Mr. Marine. **John J. Gunn,** district freight agent at Baltimore, Md., has been appointed division freight agent at Williamsport, Pa.

Mr. Weller was born at North Liberty, Pa., on September 30, 1868, and entered railway service at Pittsburgh, Pa., on September 1, 1887, with the Lake Shore & Michigan Southern (now part of the New York Central). On July 9, 1890, he left the L. S. & M. S. to go with the Pennsylvania as a rate clerk in the division

Raymond J. Wood

freight office at Pittsburgh, and subsequently served as a traveling freight agent, commercial agent, district freight solicitor, and division freight agent. On June 1, 1910, he was promoted to general western freight agent with headquarters at Chicago, and during the period of government control of the railroads, he served first as assistant chief of the Inland Traffic Service of the United States War Department, with headquarters at Pittsburgh, and later as regional traffic assistant of the Northwestern region of the United States Railroad Administration, with headquarters at Chicago. Mr. Weller returned to the Pennsylvania on March 1, 1920, as freight traffic manager, with headquarters at Chicago, and in June, 1925, he was advanced to assistant traffic manager, Western region. The following November, he was promoted to traffic manager of the Western region, and on July 1, 1928, he was advanced to assistant vice-president, traffic. On June 1, 1932, he was appointed traffic manager, with headquarters, as before, at Chicago, the position he held until his recent retirement. Mr. Weller is also a past president of the Traffic Club of Chicago.

Mr. Wood was born at Pittsburgh, Pa., on January 26, 1892, and entered the service of the Pennsylvania on January 1, 1907, as a messenger boy in the telegraph office at Pittsburgh. Four months later he was transferred to the general freight office. He was subsequently promoted through various clerical positions, and on June 1, 1924, he was appointed to district freight representative, in the freight traffic department at Chicago. On July 1, 1925, he was advanced to division freight agent, with headquarters at Toledo, Ohio, and on September 1, 1929, he was transferred to Cleveland, Ohio. Mr. Wood was promoted to general freight agent, with headquarters at Chicago on March 1, 1934, and held that position until his recent promotion.

ENGINEERING AND SIGNALING

Arthur W. Miesse, assistant to the chief engineer of the Erie, with headquarters at Cleveland, Ohio, retired on October 1.

V. H. Carruthers, roadmaster of the Melfort subdivision of the Canadian Pacific, with headquarters at Lanigan, Sask., has been promoted to division engineer of the Portage division, Manitoba district, with headquarters at Winnipeg, Man., succeeding **Thomas Martin,** who retired on September 1.

Jose Guadalue Jauregui, division engineer of the Gulf division of the National Railways of Mexico, with headquarters at Monterrey, N. L., has been transferred to the Cardenas division, with headquarters at San Luis Potosi, S. L. P., and **Antonio E. Vera** has been appointed division engineer of the Gulf division, with headquarters at Monterrey to succeed Mr. Jauregui.

O. V. Derr, valuation and general office engineer of the Erie, with headquarters at Cleveland, Ohio, resigned September 1, to enter private business and the position of valuation and general office engineer has been abolished. Mr. Derr was born at Needham, Mass., and received his education at the Stevens school and at Stevens Institute of Technology. He entered railway service in July, 1904, with the Baltimore & Ohio on location and construction work, and in September, 1906, he was appointed assistant engineer of the New York division. In July, 1908, he was

Continued on next left-hand page

NO. 70 OF A SERIES OF FAMOUS ARCHES OF THE WORLD

GREEN ISLAND VIADUCT

ENGLAND

The Green Island Viaduct of the London, Midland & Scottish Railway's North Ireland lines was opened in 1934. It consists of a main-line viaduct (on right) and the Down Shore branch (on left). The main line viaduct is the largest reinforced concrete railway viaduct in the British Isles, and is 650 ft. long with a maximum height of 70 ft. above ground level. The three main arches each have a span of 89 ft. The Down Shore Viaduct, which is 400 ft. long, has a maximum height of 40 ft. The construction of the two viaducts required 32,000 tons of concrete reinforced with 700 tons of steel. » » » Another noteworthy engineering development is the Security Sectional Arch for locomotive fireboxes. Its design, which is standard on American Railroads, is the result of long experience and careful study by American Arch Company Engineers. A complete arch, with every brick in place, is a sure way to low fuel cost.

* * *

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

appointed assistant engineer of the New Jersey and Lehigh divisions of the Lehigh Valley. In March, 1910, he re-entered the service of the B. & O., but left again in December, 1910, to become field engineer of Eyre-Shoemaker, Inc., railroad contractors at Philadelphia, Pa. In February, 1912, he entered the service of the Erie as a resident engineer. During the war he served as a captain of engineers with the U. S. Army, and in August, 1919, he returned to the Erie as resident engineer. Mr. Derr was promoted to general office engineer of the system in June, 1929, and in April, 1931, he was advanced to valuation and general office engineer, the position he held at the time of his resignation.

Blair Ripley has been appointed engineer, maintenance of way of the eastern lines of the Canadian Pacific, at Toronto, Ont., succeeding **James Edward Beatty,** retired, as reported in the *Railway Age* of October 1. Mr. Ripley entered the service of the Canadian Pacific in 1907, serving successively at Medicine Hat, Alta., Lethbridge; Outlook, Sask.; Montreal, Que.; Kentville, N. S., and Toronto. After overseas service, Mr. Ripley returned to the

Blair Ripley

Canadian Pacific at Toronto, where he subsequently became assistant engineer. He was promoted to district engineer of the Ontario district at Toronto in 1920, the position he held until his recent appointment as engineer maintenance of way.

Mr. Beatty entered the service of the Canadian Pacific as transitman at London, Ont., on May 1, 1904. He was appointed resident engineer in August of that year, and in 1906 became division engineer, on the construction of the Guelph & Goderich railway. On October 15, 1908, Mr. Beatty was appointed assistant engineer, maintenance, and in 1910, resident engineer, maintenance, both at Schreiber, Ont. He was appointed assistant engineer, construction, eastern lines, on February 24, 1911, assistant engineer, construction, Montreal, in 1912, and division engineer, construction, Montreal, in 1913. On February 12, 1915, Mr. Beatty became division engineer, maintenance of way, St. John, N. B.; on December 20, 1915, division engineer in the general superintendent's office at Montreal and on January 1, 1917, engineer, operating, Quebec district, going to Montreal in 1918 in a similar capacity. He was appointed district engineer, operating, Quebec district, in 1919, and became

J. E. Beatty

engineer, maintenance of way, at Montreal on February 6, 1933, being transferred to Toronto in the latter capacity on May 1, 1937, in which position he remained until his retirement under pension regulations.

MECHANICAL

F. J. Carty, mechanical engineer of the Boston & Albany, with headquarters at Boston, Mass., has been appointed master mechanic of the road, with the same headquarters.

L. H. Scheifele, tool and material inspector of the Reading, with headquarters at Reading, Pa., has been appointed engineer of tests, with the same headquarters, succeeding **J. B. Young,** deceased.

OBITUARY

Elmore D. Hotchkiss, who retired in October, 1925, as freight traffic manager of the Chesapeake & Ohio at Richmond, Va., died on October 9, at his home in that city, at the age of 88.

William H. Burke, whose retirement as general agent on the Grand Trunk and the Canadian National, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of October 8, died at De Paul hospital, in St. Louis, on October 6.

Leslie G. Carlton, chairman of the board and president of the Midland Terminal, Colorado Springs, Col., died at that point on September 4. Mr. Carlton had been chairman of the board since 1931, and president since October, 1934.

Fred P. Blount, superintendent of the Missouri-Kansas-Texas of Texas, with headquarters at Smithville, Tex., died on September 23 following burns received in a gasoline explosion at Cross Plains, Tex., the day before.

Joseph E. Murphy, division engineer of the Galesburg division of the Chicago, Burlington & Quincy from 1900 to 1905 and office engineer on the staff of the chief engineer at Chicago from 1906 to 1910, died in Denver, Colo., on September 27, after a year's illness.

Bernard A. McManus, assistant general auditor on the Chicago & North Western, with headquarters at Chicago, died suddenly of a heart attack on October 9 at his home in Oak Park, Ill. Mr. McManus was born on December 31, 1882, and entered railway service on May 25, 1899, as a timekeeper on the North Western. In 1900 he was appointed roadmaster's clerk at Boone, Iowa, and in 1907 he was transferred to the accounting department in Chicago. In 1910 he was promoted to assistant auditor of disbursements, and in 1914 he was appointed assistant auditor of passenger accounts. Mr. McManus was advanced to auditor of disbursements in August, 1918, and on June 1, 1936, he was promoted to assistant general auditor, the position he held at the time of his death.

John Hennessey, retired master car builder of the Chicago, Milwaukee & St. Paul, whose death at Milwaukee, Wis., on September 27 was reported in the *Railway Age* of October 8, was born in Waukesha County, Wis., in 1847, and entered railway service in July, 1871, in the Milwaukee shops at Prairie du Chien, Wis. He was later transferred to the shops at Milwaukee and Chicago. In 1879 he was promoted to foreman at the Milwaukee shops, and in 1880 he was appointed inspector of new-car construction at the various contract shops where the Milwaukee was having passenger and freight cars built. In 1887 he was advanced to general foreman of the West Milwaukee car department shops, and in 1888 he was promoted to master car builder, with headquarters at Milwaukee, the position he held until his retirement in February, 1918.

Mr. Hennessey was active in the Master Car Builders Association, of which organization he was president in 1901. He served on various important committees of

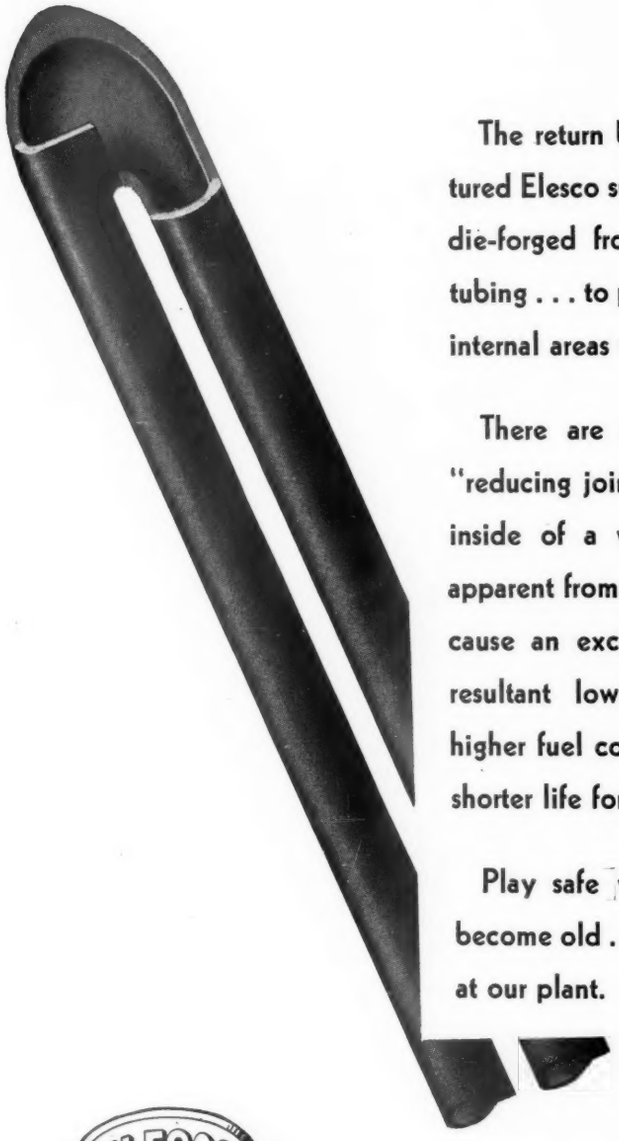
John Hennessey

this association, including the Executive Committee and the Committee on Arbitration, on which latter committee he worked continuously for 35 years, 17 of those years as chairman.

Table of Revenues and Expenses begins on next left-hand page

Sustained Cylinder Hp.

Requires A *Well Maintained* Superheater



The return bends in new or REmanufactured Elesco superheater units are machine-die-forged from the ends of superheater tubing . . . to provide full and unobstructed internal areas with minimum pressure drop.

There are no "reducing joints". A "reducing joint" is a ridge formed on the inside of a welded joint, which is not apparent from the exterior. Welded joints cause an excessive pressure drop with a resultant lower cylinder horsepower, a higher fuel cost for the locomotive, and a shorter life for the superheater.

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REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1938

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1938	Net railway operating income 1937
Akron, Canton & Youngstown	Aug.	171	$142,806	$57	$147,105	$21,734	$15,011	$12,817	$49,796	$107,781	73.3	$39,324	$26,563	$11,811	$30,962
	8 mos.	171	984,857	333	1,022,142	176,464	104,638	93,191	387,815	837,998	82.0	184,144	81,035	—26,614	247,222
Alton	Aug.	957	933,561	222,877	1,329,284	219,385	179,845	42,336	532,769	1,040,029	78.2	289,255	197,204	3,830	11,256
	8 mos.	957	7,029,958	1,652,618	10,018,167	1,330,467	1,530,875	359,018	4,303,781	8,070,634	80.6	1,947,533	1,197,655	—199,359	572,413
Atchison, Topeka & Santa Fe System	Aug.	13,500	11,168,220	1,734,019	13,982,167	1,972,869	2,833,093	402,564	4,722,399	10,290,047	73.6	3,692,120	2,223,650	2,151,442	839,123
	8 mos.	13,509	79,748,914	11,426,118	99,394,666	12,249,447	21,889,142	3,543,728	38,122,872	78,816,069	79.3	20,578,597	10,651,136	9,625,943	14,353,160
Atlanta & West Point	Aug.	93	98,537	22,070	141,282	17,912	25,066	7,804	64,130	124,868	88.4	16,414	6,463	—7,212	—10,843
	8 mos.	93	709,220	190,750	1,065,658	146,526	203,400	64,227	511,873	1,010,128	94.8	55,530	—23,729	—133,435	—15,698
Western of Alabama	Aug.	133	101,385	22,872	141,201	24,852	27,471	7,516	54,037	122,620	86.8	18,581	5,082	8,957	7,270
	8 mos.	133	716,190	191,678	1,042,017	158,092	230,676	61,822	430,801	957,380	91.9	84,637	—23,315	—692	73,089
Atlanta, Birmingham & Coast	Aug.	639	243,712	7,975	278,460	41,675	47,629	22,613	104,923	239,710	86.1	38,750	14,388	—1,194	—6,833
	8 mos.	639	1,864,258	155,978	2,237,276	342,682	404,640	190,254	911,208	2,047,619	91.5	189,657	—6,977	—196,642	11,728
Atlantic Coast Line	Aug.	5,106	2,372,708	308,058	3,010,623	448,608	756,171	136,426	1,274,198	2,750,240	91.4	260,383	85,383	94,366	56,992
	8 mos.	5,105	21,847,190	5,446,791	30,309,102	3,553,771	5,498,666	1,184,843	12,279,259	23,923,527	78.9	6,385,575	3,085,575	1,734,446	3,974,801
Charleston & Western Carolina	Aug.	343	172,751	984	178,439	25,532	30,576	8,172	60,676	132,032	74.0	46,407	26,407	26,981	23,690
	8 mos.	343	1,412,831	9,524	1,456,780	205,758	265,966	63,930	529,245	1,114,577	76.5	342,203	185,203	164,586	373,210
Baltimore & Ohio	Aug.	6,434	9,874,628	890,314	11,512,055	1,103,678	2,278,625	372,286	4,313,985	8,573,992	74.5	2,938,063	2,085,677	1,636,582	2,358,034
	8 mos.	6,440	71,754,207	7,072,434	84,449,509	7,760,499	18,646,652	2,980,568	34,665,155	68,344,631	80.9	16,104,878	9,015,404	6,001,044	18,055,332
Staten Island Rapid Transit	Aug.	24	49,987	91,637	153,580	12,614	18,947	1,113	85,153	128,579	83.7	25,001	—3,530	—9,480	—22,922
	8 mos.	24	390,471	584,562	1,052,890	79,850	154,312	8,980	660,534	989,450	94.0	63,440	—164,350	—208,810	—224,682
Bangor & Aroostook	Aug.	603	189,480	15,448	222,247	116,320	89,515	7,303	100,249	338,217	152.2	—115,970	—125,445	—106,834	—42,407
	8 mos.	603	3,869,269	135,652	4,145,085	887,165	718,847	47,430	1,095,018	2,958,705	71.4	1,186,380	774,562	747,956	1,073,460
Bessemer & Lake Erie	Aug.	224	982,073	606	992,467	142,336	191,566	10,781	161,002	535,970	54.0	456,497	441,097	446,116	1,249,961
	8 mos.	225	4,350,713	5,149	4,432,705	695,654	1,542,964	93,036	1,135,626	3,718,068	83.9	714,637	319,711	427,318	6,090,039
Boston & Maine	Aug.	1,955	2,275,004	688,232	3,442,869	391,347	461,259	62,497	1,390,582	2,464,759	71.6	978,110	655,443	460,099	339,224
	8 mos.	1,959	17,726,719	4,729,472	26,058,416	3,486,737	3,932,407	515,322	11,479,678	20,684,686	79.4	5,373,730	2,867,501	1,318,410	4,726,942
Burlington, Rock Island	Aug.	255	88,574	20,308	116,043	18,376	22,506	4,414	59,452	115,744	99.7	299	—7,911	—19,587	—25,406
	8 mos.	255	744,690	148,306	951,859	158,105	166,581	39,091	424,166	867,627	91.2	84,232	22,347	—63,283	—60,933
Cambria & Indiana	Aug.	37	92,647	.....	92,751	7,080	41,411	377	9,199	63,228	68.17	29,523	3,108	68,136	73,582
	8 mos.	37	719,276	.....	720,082	69,886	349,776	3,268	74,324	546,033	75.82	174,049	940	465,968	627,956
Canadian Pacific Lines in Maine	Aug.	234	73,304	16,994	104,335	31,447	25,191	10,271	43,720	112,408	107.7	—8,073	—18,172	—29,730	—10,220
	8 mos.	234	1,412,226	115,999	1,630,207	322,778	328,044	80,284	598,890	1,392,504	85.4	237,703	153,476	—18,671	70,636
Canadian Pacific Lines in Vermont	Aug.	91	52,623	13,297	77,704	14,173	20,462	4,491	55,210	94,938	122.2	—17,234	—24,036	—42,724	—29,322
	8 mos.	91	378,023	74,523	536,210	119,572	182,970	35,400	467,019	845,772	157.7	—309,562	—365,715	—517,796	—307,401
Central of Georgia	Aug.	1,926	977,832	102,567	1,202,384	163,880	244,223	49,266	525,278	1,055,482	87.8	146,902	35,964	52,333	—1,689
	8 mos.	1,926	7,688,492	857,771	9,686,204	1,317,716	1,929,106	423,351	4,435,690	8,729,083	90.1	957,121	63,473	—109,421	856,734
Central of New Jersey	Aug.	710	1,716,017	478,127	2,404,825	178,796	405,754	54,239	1,069,452	1,810,267	75.3	594,558	84,361	—70,350	92,935
	8 mos.	709	14,568,076	3,016,693	18,942,063	1,127,994	3,149,882	399,735	8,679,548	14,101,825	74.4	4,840,238	1,566,539	370,648	1,793,383
Central Vermont	Aug.	430	341,140	47,134	428,087	86,067	80,201	12,438	196,820	395,445	92.4	32,642	4,697	—25,150	—54,262
	8 mos.	446	2,594,829	292,538	3,197,796	609,928	567,555	101,459	1,670,776	3,111,773	97.3	86,023	—131,579	—407,594	227,940
Chesapeake & Ohio	Aug.	3,102	8,849,433	251,210	9,489,312	970,860	1,819,815	202,767	2,297,334	5,572,900	58.7	3,916,412	2,787,629	2,809,296	3,902,152
	8 mos.	3,102	60,463,060	2,056,175	64,978,112	7,329,562	13,059,950	1,599,107	17,551,565	41,935,832	64.5	23,042,280	15,596,770	15,275,310	27,571,275
Chicago & Eastern Illinois	Aug.	927	879,703	117,006	1,132,670	151,106	165,591	51,559	477,308	909,395	80.3	223,275	144,275	50,820	94,186
	8 mos.	927	7,042,112	944,367	9,045,297	1,152,745	1,492,796	437,865	3,895,356	7,500,835	82.9	1,544,462	912,462	—55,938	740,975
Chicago & Illinois Midland	Aug.	131	297,379	1,661	310,385	43,902	74,885	18,873	78,725	234,678	75.6	75,707	52,776	49,424	66,658
	8 mos.	131	2,195,769	8,354	2,271,144	243,157	504,479	153,497	628,040	1,671,078	73.6	600,066	424,835	400,370	601,564
Chicago & North Western	Aug.	8,391	5,986,017	1,089,630	7,769,389	1,380,044	1,393,137	198,694	2,931,288	6,222,385	80.1	1,547,004	921,572	551,175	—129,791
	8 mos.	8,391	38,296,998	7,573,059	51,210,996	8,529,408	11,841,210	1,542,380	22,657,057	47,050,298	91.9	4,160,698	—933,768	—2,681,399	—1,442,601
Chicago, Burlington & Quincy	Aug.	8,970	6,977,782	1,010,538	8,788,869	1,326,506	1,172,781	239,043	2,793,731	5,846,881	66.5	2,941,988	2,194,111	1,725,512	1,014,088
	8 mos.	8,970	46,181,507	6,102,165	58,530,199	7,622,133	10,240,636	1,977,014	21,976,260	44,212,510	75.5	14,317,689	8,599,739	5,434,882	7,420,397
Chicago Great Western	Aug.	1,505	1,393,539	40,389	1,537,942	222,673	172,767	56,720	552,095	1,056,246	68.7	481,696	398,038	195,386	48,632
	8 mos.	1,505	9,771,493	315,113	10,830,766	1,718,045	1,822,351	449,764	4,473,025	8,874,757	81.9	1,956,009	1,236,717	—189,734	302,524
Chicago, Indianapolis & Louisville	Aug.	549	608,250	41,435	713,897	82,821	154,256	27,813	296,044	594,339	83.3	119,558	78,143	—17,862	—68,043
	8 mos.	549	4,397,183	370,869	5,257,742	570,338	1,191,817	232,185	2,383,835	4,674,341	88.9	583,401	249,514	—490,454	84,828

Continued on next left-hand page

THERE is nothing new or experimental in the ALCO 900 H.P. Diesel Locomotive. It is our same tried and proven six-cylinder, four-cycle, Railway Type Diesel engine equipped with a Supercharger which has been used effectively in Europe for quite some time.

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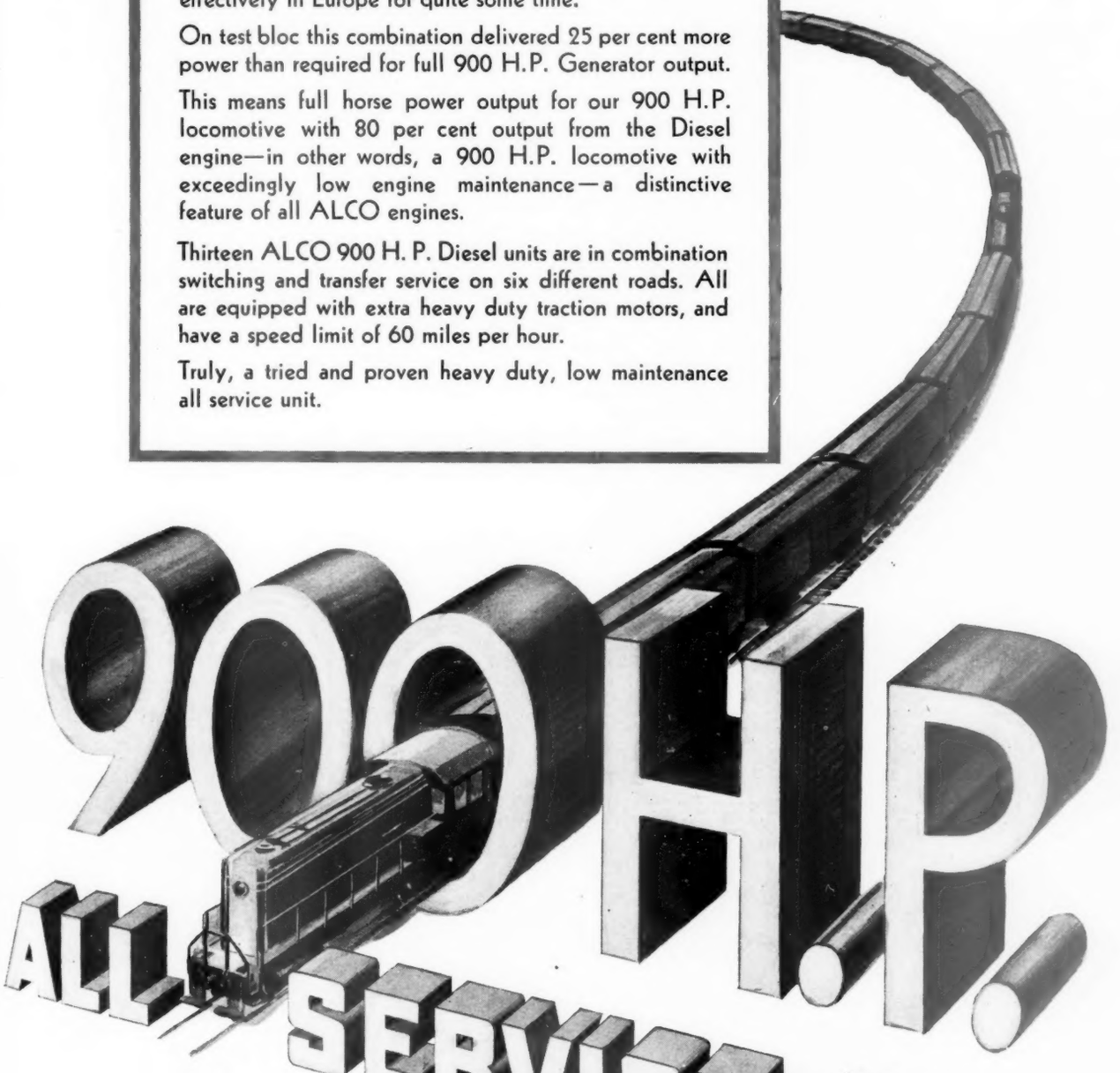

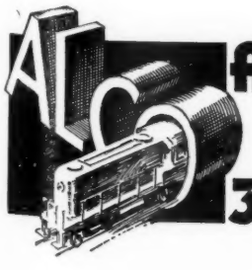

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET · NEW YORK · N·Y

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: 1938	1937
Chicago, Milwaukee, St. Paul & Pacific	Aug.	10,951	$8,355,539	$747,732	$9,920,718	$1,787,318	$1,608,564	$228,495	$3,507,376	$7,494,111	75.5	$2,426,607	$1,642,607	$1,180,442	$914,509
	8 mos.	10,957	51,686,786	5,121,021	62,774,187	9,223,473	12,549,722	1,835,016	25,977,259	52,540,429	83.7	10,233,758	4,284,758	1,102,628	5,782,780
Chicago, Rock Island & Pacific	Aug.	7,355	5,185,251	602,636	6,269,842	1,092,902	1,227,223	236,281	2,381,790	5,232,838	83.5	1,037,004	601,737	198,285	367,865
	8 mos.	7,441	39,016,911	4,927,438	47,898,054	6,978,522	9,753,956	1,861,725	20,108,793	41,243,620	86.1	6,654,434	2,774,209	70,006	2,503,248
Chicago, Rock Island & Gulf	Aug.	627	263,788	30,310	407,694	46,573	37,772	18,936	128,569	256,378	62.9	151,316	126,208	21,420	26,993
	8 mos.	627	2,375,549	224,927	3,361,348	534,516	300,606	154,701	1,129,682	2,320,227	69.0	1,041,121	838,839	143,353	373,998
Chicago, St. Paul, Minneapolis & Omaha	Aug.	1,646	1,579,575	138,764	1,817,591	282,373	294,239	36,843	683,112	1,362,215	74.9	455,376	334,890	204,882	107,844
	8 mos.	1,648	9,033,727	975,160	10,753,973	1,477,675	1,947,943	299,700	5,122,915	9,379,738	87.2	1,374,235	495,050	—342,392	—492,359
Clinchfield Railroad	Aug.	308	484,517	4,306	493,764	29,111	89,894	18,054	97,545	262,583	53.2	231,181	182,380	196,533	285,831
	8 mos.	308	3,616,192	30,491	3,689,371	295,351	794,290	149,725	807,351	2,191,548	59.4	1,497,823	1,099,862	1,200,372	2,161,172
Colorado & Southern	Aug.	793	558,822	54,341	670,750	79,017	115,413	13,433	246,239	482,248	71.9	188,502	125,874	101,740	120,042
	8 mos.	797	3,412,008	271,439	4,079,453	409,956	908,159	105,426	1,742,997	3,385,508	83.0	693,945	124,804	—30,142	586,194
Fort Worth & Denver City	Aug.	902	477,741	73,094	533,564	61,085	83,132	17,862	180,908	377,953	70.8	155,611	117,097	64,381	60,837
	8 mos.	902	4,076,328	456,713	4,452,638	454,255	753,475	144,249	1,507,946	3,132,560	70.4	1,320,078	1,010,569	633,404	1,445,745
Columbus & Greenville	Aug.	168	92,597	7,979	106,982	18,175	12,259	4,415	36,328	80,384	75.1	26,598	20,135	21,130	—10,994
	8 mos.	168	654,692	57,790	761,417	138,672	111,263	34,530	288,287	656,362	86.2	105,055	53,768	55,160	7,680
Delaware & Hudson	Aug.	831	1,382,934	147,146	1,622,877	180,937	270,111	39,122	665,224	1,254,615	77.3	368,262	248,741	222,289	—43,392
	8 mos.	831	11,952,252	763,239	13,360,146	1,342,814	2,392,287	350,990	5,741,348	10,677,587	79.9	2,682,559	1,495,202	1,448,493	2,238,866
Delaware, Lackawanna & Western	Aug.	986	2,408,677	579,603	3,438,913	425,622	608,907	112,925	1,732,897	2,985,914	86.8	452,999	42,999	4,052	5,895
	8 mos.	986	20,436,418	4,458,593	28,389,574	2,313,534	5,162,228	914,657	14,306,873	23,709,188	83.5	4,680,386	1,254,386	937,876	4,159,262
Denver & Rio Grande Western	Aug.	2,563	1,863,924	147,701	2,122,569	333,016	561,693	66,881	767,697	1,822,136	85.8	300,433	106,118	—17,890	—287,596
	8 mos.	2,568	11,950,008	984,940	13,720,067	2,141,989	4,060,009	512,500	5,388,889	12,800,064	93.3	920,003	—812,026	—1,347,489	—1,105,114
Denver & Salt Lake	Aug.	232	141,223	10,276	160,911	29,094	32,082	2,631	49,993	123,612	76.8	37,299	16,043	64,750	14,110
	8 mos.	232	1,005,604	54,902	1,131,857	194,748	288,508	19,878	388,624	972,535	85.9	159,322	—62,078	309,779	413,514
Detroit & Mackinac	Aug.	242	74,921	3,150	86,242	14,159	14,278	976	25,737	58,171	67.5	28,071	24,729	19,329	13,694
	8 mos.	242	436,230	21,284	510,997	98,138	93,679	7,960	199,181	423,457	82.9	87,540	65,010	34,292	57,846
Detroit & Toledo Shore Line	Aug.	50	180,598	.....	181,395	16,129	17,264	8,542	59,654	108,378	59.7	73,017	49,253	9,572	51,714
	8 mos.	50	1,501,814	.....	1,505,345	153,660	162,360	72,925	472,119	919,128	61.1	586,217	414,976	112,379	732,820
Detroit, Toledo & Ironton	Aug.	472	335,007	264	350,458	42,618	73,169	10,983	103,648	247,442	70.6	103,016	60,648	57,962	117,004
	8 mos.	472	3,014,437	1,609	3,143,069	366,664	635,649	89,508	901,426	2,134,819	67.9	1,008,250	647,239	597,970	1,695,777
Duluth, Missabe & Iron Range	Aug.	540	1,261,496	2,388	1,529,274	135,001	142,393	4,111	268,336	583,295	38.1	945,979	837,559	833,379	2,576,863
	8 mos.	540	4,869,064	13,262	5,794,847	1,009,844	1,583,416	34,113	1,664,976	4,556,419	78.6	1,238,428	725,907	720,016	10,791,778
Duluth, Winnipeg & Pacific	Aug.	179	89,710	1,749	94,684	27,745	28,720	2,285	42,564	104,959	110.9	—10,275	—18,395	—28,945	9,055
	8 mos.	179	704,412	11,548	738,957	195,890	185,539	18,341	352,834	786,062	106.4	—47,105	—110,072	—219,019	16,228
Elgin, Joliet & Eastern	Aug.	435	835,937	1	975,823	126,368	202,802	13,700	396,989	771,429	79.1	204,394	106,842	100,276	443,765
	8 mos.	435	6,116,292	22	6,919,304	820,583	1,688,663	115,971	3,181,891	6,109,008	88.3	810,296	30,496	5,393	3,406,518
Erie	Aug.	2,276	5,182,260	450,114	6,111,445	767,182	1,219,356	163,659	2,400,227	4,816,012	78.8	1,295,433	721,504	440,450	1,109,791
	8 mos.	2,276	36,953,585	3,294,245	43,711,920	5,023,285	9,640,886	1,351,517	18,731,999	36,792,111	84.2	6,919,809	2,420,159	370,490	10,750,013
New Jersey & New York	Aug.	46	13,856	36,118	51,955	5,462	11,600	573	40,329	59,043	113.6	—7,088	—14,391	—26,683	—32,135
	8 mos.	46	113,482	315,490	444,734	42,233	92,428	3,769	335,913	484,684	109.0	—39,950	—98,089	—198,996	—224,819
New York, Susquehanna & Western	Aug.	143	179,048	19,722	209,212	30,269	25,498	2,994	93,824	164,823	78.8	44,389	11,943	—26,343	—11,586
	8 mos.	143	1,711,033	173,112	1,973,497	203,534	210,165	25,108	817,722	1,365,618	69.2	607,879	350,170	28,569	267,324
Florida East Coast	Aug.	685	272,095	78,241	410,106	124,930	138,040	20,187	173,293	493,245	120.3	—83,139	—160,208	—182,868	—157,883
	8 mos.	685	4,357,938	2,036,637	7,062,280	759,725	1,132,672	179,367	2,288,496	4,817,816	68.2	2,244,464	1,599,936	1,085,140	817,575
Georgia Railroad	Aug.	329	278,229	17,285	318,999	28,569	45,594	18,504	129,104	235,562	73.8	83,437	68,289	83,838	48,089
	8 mos.	329	1,971,621	98,018	2,246,259	257,207	391,327	148,735	1,030,600	1,941,153	86.4	305,106	180,292	274,793	485,414
Georgia & Florida	Aug.	408	170,004	2,789	176,698	24,444	22,469	9,144	43,098	104,256	59.0	72,442	64,465	56,193	52,726
	8 mos.	408	714,763	15,224	757,993	158,298	143,525	65,826	288,208	699,065	92.2	58,928	—3,171	—20,628	44,849
Grand Trunk Western	Aug.	1,032	1,168,888	100,166	1,384,360	234,685	327,494	43,472	684,152	1,368,214	98.8	16,146	—91,040	—157,789	53,034
	8 mos.	1,032	9,540,673	653,409	11,026,481	1,728,536	2,479,425	351,499	5,709,769	10,877,573	98.6	148,908	—814,750	—1,364,911	2,086,467
Canadian National Lines in New England	Aug.	172	89,888	12,386	111,227	53,874	22,470	2,659	64,646	149,905	134.8	—38,678	—53,982	—84,080	—79,371
	8 mos.	172	731,371	60,109	858,590	251,816	184,606	21,626	481,111	977,566	113.8	—118,976	—241,415	—451,644	—403,257
Great Northern	Aug.	8,072	8,638,717	456,449	9,699,901	1,129,095	1,266,191	181,439	2,745,594	5,604,221	57.8	4,095,680	3,251,959	3,004,016	3,170,796
	8 mos.	8,071	39,301,819	3,146,304	46,348,690	5,275,975	8,636,822	1,535,965	17,498,752	35,055,333	75.6	11,293,357	5,519,051	4,382,467	14,536,674

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1938	1937
Green Bay & Western	Aug.	234	$140,839	$436	$147,286	$24,809	$18,270	$6,295	$46,714	$100,063	67.9	$47,223	$34,736	$24,866	$15,941
	8 mos.	234	944,238	4,473	987,425	172,275	129,588	50,905	353,862	740,768	75.0	246,657	157,001	97,428	154,620
Gulf & Ship Island	Aug.	259	59,835	11,452	79,008	22,760	15,830	2,728	52,364	98,178	124.3	—19,170	—36,493	—44,280	—19,347
	8 mos.	259	667,670	62,651	816,144	168,560	122,564	21,591	443,831	797,026	97.7	19,118	—119,153	—195,484	—9,411
Gulf, Mobile & Northern	Aug.	824	470,910	25,027	517,032	73,063	68,529	37,660	142,243	356,278	68.9	160,754	111,754	84,763	120,949
	8 mos.	908	3,889,923	176,969	4,258,048	551,290	636,520	319,037	1,251,555	3,042,236	71.5	1,215,812	823,812	456,969	946,870
Illinois Central	Aug.	4,951	6,170,029	777,870	7,442,760	758,186	1,470,386	167,243	2,758,580	5,471,179	73.5	1,971,581	1,301,060	1,302,441	1,055,456
	8 mos.	4,952	46,893,294	6,019,657	57,660,799	5,660,467	11,478,963	1,337,939	23,034,829	44,034,535	76.4	13,626,264	8,304,766	7,442,845	7,287,136
Yazoo & Mississippi Valley	Aug.	1,619	1,026,653	77,432	1,167,565	119,853	166,242	27,877	447,126	805,335	69.0	362,230	223,979	156,339	134,696
	8 mos.	1,619	7,793,840	548,731	8,922,731	839,829	1,236,654	222,944	3,659,817	6,321,960	70.9	2,600,771	1,473,571	897,161	1,507,568
Illinois Central System	Aug.	6,570	7,196,682	855,302	8,610,325	878,039	1,636,628	195,120	3,205,706	6,276,514	72.9	2,333,811	1,522,973	1,468,680	1,198,952
	8 mos.	6,571	54,687,134	6,568,388	66,583,530	6,500,296	12,715,617	1,560,883	26,694,646	50,356,495	75.6	16,227,035	9,761,812	8,414,406	8,870,654
Illinois Terminal	Aug.	496	370,809	58,754	469,720	61,771	74,595	15,747	159,625	329,199	70.8	140,521	96,643	79,507	191,508
	8 mos.	496	2,648,757	477,420	3,421,233	405,339	539,636	126,426	1,276,579	2,491,856	72.84	929,377	558,350	438,889	1,009,612
Kansas City Southern	Aug.	879	920,110	23,458	1,047,250	110,501	143,051	49,673	311,808	672,941	64.3	374,309	272,309	227,185	362,435
	8 mos.	879	7,712,233	152,079	8,780,067	905,829	1,190,649	403,030	2,608,588	5,607,499	63.9	3,172,568	2,348,568	1,943,115	2,108,595
Kansas, Oklahoma & Gulf	Aug.	327	184,063	491	187,024	29,859	13,937	8,597	40,245	97,121	51.9	89,903	68,755	51,903	81,530
	8 mos.	327	1,457,798	3,647	1,488,755	154,902	137,118	71,844	353,830	781,440	52.5	707,315	561,620	430,670	528,613
Lake Superior & Ishpeming	Aug.	156	106,421	78	132,661	25,959	16,405	742	29,510	78,860	59.4	53,801	28,844	27,776	314,139
	8 mos.	156	518,997	500	602,804	212,216	187,338	5,523	204,153	663,542	110.1	—60,738	—239,880	—246,458	1,049,096
Lehigh & Hudson River	Aug.	96	113,819	99	114,882	16,362	19,593	3,549	40,660	86,271	75.1	28,611	15,384	4,088	20,740
	8 mos.	96	908,630	1,086	915,293	79,954	167,470	29,393	340,085	668,706	73.1	246,587	143,429	43,294	142,214
Lehigh & New England	Aug.	205	243,146	.....	246,313	27,196	55,522	6,211	93,093	194,761	79.1	51,552	34,476	42,362	32,032
	8 mos.	208	2,186,437	.....	2,206,200	242,617	486,014	55,487	797,244	1,692,040	76.7	514,160	354,405	411,719	530,945
Lehigh Valley	Aug.	1,307	2,731,534	164,594	3,092,378	175,275	693,189	109,682	1,373,652	2,506,527	81.1	585,851	289,945	134,632	251,657
	8 mos.	1,307	23,143,075	1,448,251	26,286,905	1,490,819	5,230,661	896,411	12,022,715	20,716,893	78.8	5,570,012	3,232,974	1,751,545	3,834,944
Louisiana & Arkansas	Aug.	606	519,651	8,798	545,246	66,592	72,541	29,895	139,510	328,176	60.2	217,070	163,932	142,362	122,272
	8 mos.	606	3,721,488	75,574	3,945,679	521,858	567,677	252,241	1,084,069	2,591,095	65.7	1,354,584	1,005,573	826,582	818,430
Louisiana, Arkansas & Texas	Aug.	240	89,129	271	95,715	24,961	12,007	4,916	34,732	81,447	85.1	14,268	9,360	—2,460	13,686
	8 mos.	240	719,253	1,499	758,650	201,763	105,156	38,685	310,462	680,996	89.8	77,654	37,164	—58,429	53,063
Louisville & Nashville	Aug.	4,938	5,724,382	523,212	6,740,807	703,357	1,481,151	174,005	2,365,236	4,986,020	74.0	1,754,787	1,190,992	1,307,258	1,183,879
	8 mos.	4,938	41,948,814	4,206,230	49,815,308	5,443,307	11,325,318	1,482,036	19,350,311	39,806,105	79.9	10,009,203	5,478,449	5,510,732	10,772,528
Maine Central	Aug.	995	672,199	118,890	888,219	143,673	115,114	10,675	339,025	645,333	72.7	242,886	169,663	147,089	134,113
	8 mos.	1,001	6,095,105	689,395	7,445,941	1,208,419	1,247,815	91,583	2,888,462	5,722,996	76.9	1,722,945	1,159,415	817,948	1,474,151
Midland Valley	Aug.	352	135,084	8	137,591	19,164	12,078	2,306	30,981	70,096	50.9	67,495	55,598	47,717	54,381
	8 mos.	352	837,297	64	852,504	113,780	99,603	20,411	232,680	514,062	60.3	338,442	242,414	197,988	307,086
Minneapolis & St. Louis	Aug.	1,523	907,300	9,856	952,984	177,108	124,705	44,747	293,177	681,755	71.5	271,229	223,213	167,006	114,807
	8 mos.	1,525	5,369,825	75,946	5,717,043	897,410	971,351	349,152	2,229,651	4,732,453	82.8	984,590	632,299	298,326	127,325
Minneapolis, St. Paul & Sault Ste. Marie	Aug.	4,297	2,249,381	126,479	2,562,212	338,125	402,335	61,573	993,695	1,920,901	75.0	641,311	424,685	282,659	413,692
	8 mos.	4,298	13,307,682	785,265	15,426,436	2,312,530	3,014,835	488,427	7,289,210	13,847,970	89.8	1,578,466	105,316	—879,665	1,661,415
Duluth, South Shore & Atlantic	Aug.	549	142,995	12,697	170,595	38,209	31,040	4,797	76,017	156,998	92.0	13,597	—313	—4,646	35,479
	8 mos.	549	988,126	94,843	1,198,176	274,618	242,948	34,595	602,025	1,189,090	99.2	9,086	—97,555	—133,663	385,778
Spokane International	Aug.	164	72,516	996	79,945	14,791	7,824	2,034	22,871	52,253	65.4	27,692	22,247	19,740	30,336
	8 mos.	164	427,193	9,192	484,255	121,180	62,135	16,989	173,649	411,633	85.0	72,622	31,025	12,330	66,487
Mississippi Central	Aug.	150	67,649	1,693	71,641	10,978	8,027	7,144	18,475	49,251	68.7	22,390	17,886	12,810	5,073
	8 mos.	150	484,558	14,635	516,180	91,498	76,262	57,153	165,792	429,328	83.2	86,852	49,788	10,418	21,986
Missouri & Arkansas	Aug.	365	83,268	1,894	91,404	18,000	10,221	5,067	27,384	65,178	71.3	26,226	22,131	13,298	15,466
	8 mos.	365	572,657	12,729	628,269	164,516	86,062	41,777	230,272	557,306	88.7	70,963	38,843	—22,429	10,553
Missouri-Illinois	Aug.	193	87,019	469	89,183	22,622	11,773	3,018	30,201	72,909	81.8	16,274	10,998	3,600	24,789
	8 mos.	193	653,289	3,936	671,392	146,483	103,034	22,661	243,116	556,970	83.0	114,422	64,705	—1,361	169,363
Missouri-Kansas-Texas Lines	Aug.	3,294	1,953,130	192,620	2,374,919	376,779	396,516	108,078	905,684	1,923,358	81.0	451,561	221,311	8,501	287,023
	8 mos.	3,294	14,948,513	1,413,297	18,171,861	2,703,089	2,997,915	885,138	7,364,272	15,012,198	82.6	3,159,663	1,651,135	145,716	2,283,505
Missouri Pacific	Aug.	7,173	5,989,542	481,875	7,023,641	1,298,696	1,264,518	235,967	2,480,601	5,524,932	78.7	1,498,709	997,731	618,514	1,003,620
	8 mos.	7,174	43,942,314	3,380,065	51,994,353	8,071,538	10,058,659	1,916,370	20,208,851	42,368,384	81.5	9,625,969	5,674,425	2,604,629	8,236,595

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TIME LOST

for Repairs—Inspection
Fire Cleaning—Fueling
Boiler Washing—Watering

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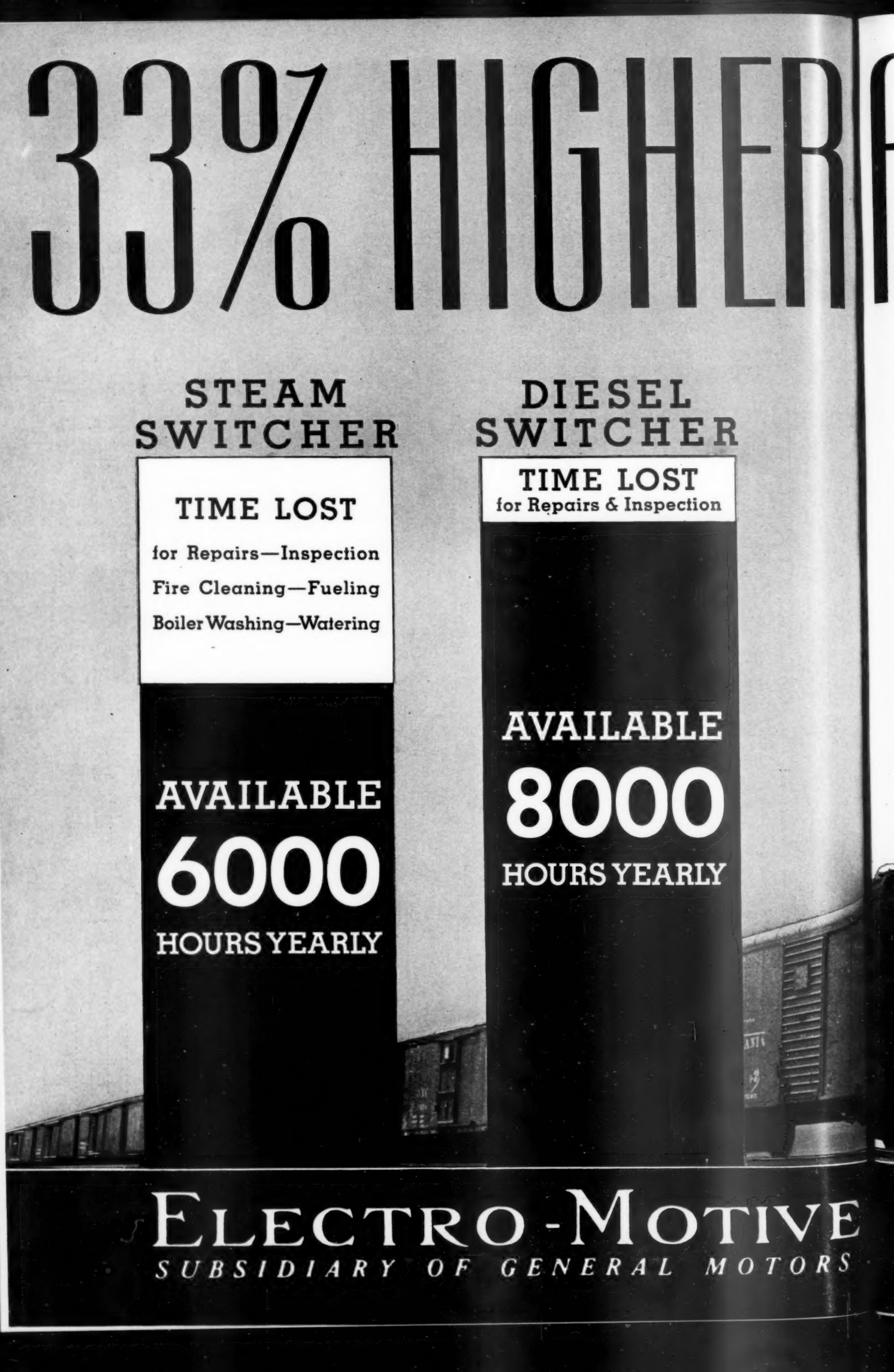
HOURS YEARLY

DIESEL SWITCHER

TIME LOST
for Repairs & Inspection

AVAILABLE
8000
HOURS YEARLY



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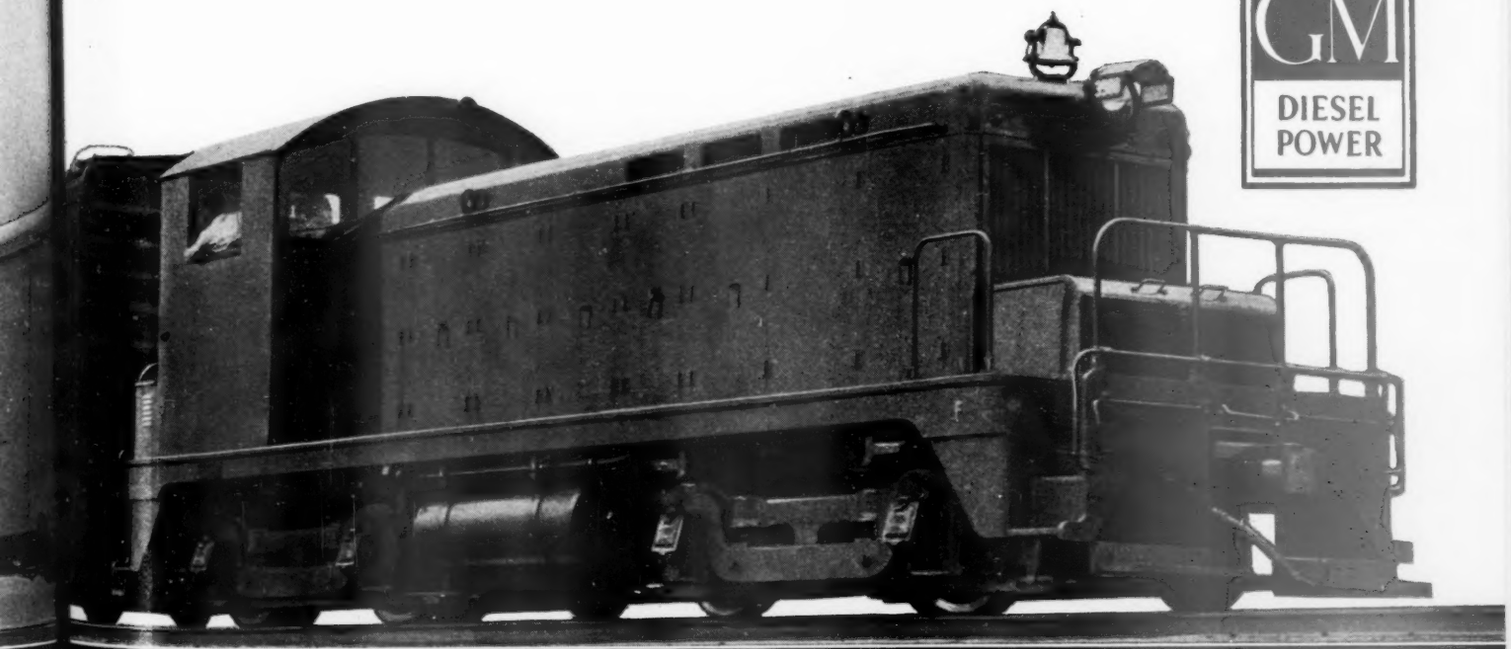

E CORPORATION

S LA GRANGE, ILLINOIS, U. S. A.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1938	1937
Gulf Coast Lines	Aug.	1,767	$700,244	$44,021	$802,731	$182,459	$183,468	$44,425	$335,445	$795,220	78.79	$7,511	—$64,352	—$114,062	$84,061
	8 mos.	1,767	9,158,160	326,874	9,944,005	1,530,060	1,510,822	368,645	3,190,309	6,986,490	70.26	2,957,515	2,372,029	1,518,360	2,727,063
International Great Northern	Aug.	1,155	805,328	99,182	1,006,787	166,430	200,051	31,396	438,615	890,876	88.5	115,911	56,041	—21,787	68,687
	8 mos.	1,155	6,464,525	645,933	7,942,254	1,239,977	1,565,651	252,634	3,600,346	7,099,856	89.4	842,398	363,300	—401,229	295,068
Mobile & Ohio	Aug.	1,194	915,458	35,922	993,802	119,359	185,415	43,613	347,568	741,833	74.6	251,969	190,414	121,039	3,888
	8 mos.	1,194	6,903,169	225,672	7,513,524	919,944	1,329,173	339,327	2,921,724	5,861,732	78.0	1,651,792	1,167,511	563,728	853,593
Monongahela	Aug.	172	271,022	1,024	273,722	19,712	22,420	454	60,512	106,238	38.8	167,484	136,765	71,309	88,113
	8 mos.	172	2,013,275	6,102	2,032,322	164,369	155,494	3,886	492,817	842,389	41.4	1,189,933	946,217	409,241	830,662
Montour	Aug.	56	154,753	.....	155,486	13,833	43,427	924	32,872	97,592	62.8	57,894	35,261	67,967	111,982
	8 mos.	56	961,614	.....	973,677	83,698	294,417	7,813	262,206	700,589	72.0	273,088	132,397	342,121	750,612
Nashville, Chattanooga & St. Louis	Aug.	1,116	926,701	76,524	1,113,290	116,211	202,050	61,155	430,473	862,527	77.5	250,763	175,512	156,040	64,529
	8 mos.	1,116	7,149,663	710,196	8,801,140	947,895	1,544,708	518,425	3,634,373	7,101,208	80.7	1,699,932	1,099,878	902,526	929,650
Nevada Northern	Aug.	166	45,478	658	50,415	7,529	2,835	1,160	8,855	24,747	49.1	25,668	16,692	19,869	23,818
	8 mos.	166	294,819	8,184	342,531	65,080	25,704	9,749	77,677	216,851	63.2	125,680	53,490	80,648	163,752
New York Central	Aug.	11,077	17,086,817	4,979,742	25,074,978	3,014,515	4,497,754	529,369	9,887,289	19,139,798	76.3	5,935,180	3,323,262	2,307,971	3,209,801
	8 mos.	11,078	125,064,315	39,427,911	186,908,727	20,325,367	37,138,772	4,449,265	80,794,149	152,744,791	81.7	34,163,936	11,379,369	3,387,042	28,989,421
Pittsburgh & Lake Erie	Aug.	233	1,216,677	39,934	1,302,029	118,947	381,221	27,375	445,629	1,050,228	80.7	251,801	103,243	266,629	546,996
	8 mos.	233	7,536,736	347,783	8,229,686	835,035	2,841,044	224,525	3,436,849	7,974,036	96.9	255,650	—685,292	682,298	3,412,162
New York, Chicago & St. Louis	Aug.	1,704	3,021,061	72,661	3,203,094	336,328	482,432	120,675	1,108,199	2,167,273	67.7	1,035,821	836,622	579,764	846,915
	8 mos.	1,704	21,453,040	592,375	22,864,796	2,422,657	3,802,698	957,494	8,992,038	17,127,631	74.9	5,737,165	4,159,385	2,167,425	5,838,296
New York, New Haven & Hartford	Aug.	2,025	3,107,069	2,389,762	6,137,814	917,180	996,625	101,340	2,478,487	4,836,209	78.8	1,301,605	816,605	276,851	2,092
	8 mos.	2,023	24,442,883	17,322,175	46,814,619	6,556,829	8,414,119	858,273	20,059,460	38,794,240	82.9	8,020,379	3,990,379	—216,280	3,920,228
New York Connecting	Aug.	21	231,372	.....	240,052	36,083	8,183	.....	28,196	73,756	30.7	166,296	124,431	94,477	12,421
	8 mos.	21	1,535,398	.....	1,595,400	165,399	85,194	.....	238,648	499,483	31.3	1,095,917	774,941	542,366	948,688
New York, Ontario & Western	Aug.	576	414,711	93,847	553,409	94,041	142,215	13,185	271,307	544,018	98.3	9,391	—45,096	—82,382	—44,053
	8 mos.	576	3,562,146	314,520	4,248,151	578,316	1,035,921	108,437	2,102,301	4,027,246	94.8	220,905	—206,094	—460,932	—8,524
Norfolk & Western	Aug.	2,200	6,678,769	166,106	7,034,569	670,957	1,222,354	133,813	1,587,086	3,799,715	54.0	3,234,854	2,294,097	2,493,262	2,761,321
	8 mos.	2,200	42,672,126	1,265,252	45,388,676	5,342,145	10,027,850	1,102,775	12,353,401	30,345,251	66.9	15,043,425	8,337,481	9,564,325	21,620,200
Norfolk Southern	Aug.	809	338,323	6,295	358,273	64,716	51,605	23,898	132,149	293,292	81.9	64,981	30,524	21,414	—3,456
	8 mos.	809	2,825,476	39,167	2,983,904	507,433	415,820	190,639	1,092,606	2,394,871	80.1	589,033	314,003	201,106	345,014
Northern Pacific	Aug.	6,721	5,413,415	494,671	6,435,682	811,770	1,102,019	194,115	2,055,055	4,480,004	69.6	1,955,678	1,320,777	1,505,684	1,240,437
	8 mos.	6,721	29,193,499	2,843,327	35,476,270	5,396,881	7,765,881	1,426,798	14,645,370	31,510,950	88.8	3,965,320	—734,962	1,459,081	6,126,643
Northwestern Pacific	Aug.	352	276,826	63,390	369,028	70,182	52,118	2,875	180,006	317,911	86.1	51,117	30,902	15,880	—2,380
	8 mos.	352	1,337,665	419,381	1,950,212	612,171	396,480	29,432	1,308,135	2,443,730	125.3	—493,518	—646,736	—745,003	—4,421
Oklahoma City-Ada-Atoka	Aug.	132	36,261	495	38,521	9,186	1,276	836	11,141	24,181	62.8	14,340	10,671	6,415	1,819
	8 mos.	132	271,768	3,088	289,262	69,113	18,414	6,920	88,202	198,880	68.8	90,382	64,166	21,299	46,465
Pennsylvania	Aug.	10,306	22,425,248	5,322,164	30,619,520	2,714,840	5,255,839	625,389	11,001,633	20,762,450	67.8	9,857,070	6,389,805	5,621,015	6,572,399
	8 mos.	10,306	162,148,825	43,037,776	227,602,670	21,517,113	41,231,425	5,299,149	88,550,038	166,696,362	73.2	60,906,308	36,504,963	30,255,565	51,490,143
Long Island	Aug.	394	436,081	1,748,957	2,283,874	151,198	316,626	8,440	971,232	1,478,216	64.7	805,658	368,120	180,536	138,873
	8 mos.	394	3,894,572	10,875,383	15,465,578	1,248,182	2,459,257	63,814	7,609,241	11,649,905	75.3	3,815,673	1,389,734	124,759	109,599
Pennsylvania-Reading Seashore Lines	Aug.	412	219,459	532,811	781,116	73,089	76,988	8,790	367,549	545,812	69.9	235,304	93,292	—48,771	29,039
	8 mos.	412	1,628,996	1,869,439	3,665,490	584,090	611,292	60,631	2,325,786	3,717,553	101.4	—52,063	—792,751	—1,433,714	—1,029,844
Pere Marquette	Aug.	2,115	1,820,292	133,106	2,126,745	308,385	478,295	65,399	810,992	1,763,841	82.9	362,904	202,801	81,985	308,708
	8 mos.	2,115	13,734,653	703,316	15,393,236	2,404,396	3,711,743	507,490	6,634,319	14,028,985	91.1	1,364,251	164,211	—716,083	3,324,845
Pittsburg & Shawmut	Aug.	101	29,092	.....	29,433	10,711	11,181	1,353	11,038	36,688	124.6	—7,255	—8,739	—8,311	500
	8 mos.	101	297,179	947	301,579	79,190	117,329	12,789	110,181	353,981	117.4	—52,402	—64,049	—56,405	16,887
Pittsburgh & West Virginia	Aug.	136	242,998	.....	260,254	65,098	61,114	16,090	59,618	223,447	85.9	36,807	12,965	28,248	97,393
	8 mos.	136	1,717,737	.....	1,854,267	310,814	430,777	128,962	466,903	1,511,688	81.5	342,579	203,143	314,029	851,685
Pittsburg, Shawmut & Northern	Aug.	190	68,680	.....	69,267	11,242	10,402	882	25,367	53,309	77.0	15,958	11,187	5,440	4,905
	8 mos.	190	541,146	1	546,461	102,891	93,374	8,383	208,133	460,514	84.3	85,947	46,574	—14,387	—20,517
Reading	Aug.	1,451	3,443,932	263,250	3,886,375	306,929	621,153	70,716	1,635,934	2,774,640	71.4	1,111,735	893,397	906,958	840,305
	8 mos.	1,452	27,313,708	2,118,982	30,878,190	1,979,545	6,077,399	606,157	13,644,399	23,504,677	76.1	7,373,513	5,199,536	5,450,073	9,820,774
Richmond, Fredericksburg & Potomac	Aug.	118	311,159	129,011	524,122	55,240	112,253	8,978	208,355	417,774	79.7	106,348	55,407	49,624	20,214
	8 mos.	118	2,901,046	1,581,162	5,248,483	527,793	1,043,613	76,011	2,191,190	4,196,174	80.0	1,052,309	643,970	305,855	817,241

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income 1938	Net railway operating income 1937
Rutland	Aug.	407	$170,121	$41,051	$280,791	$34,606	$51,672	$9,690	$140,003	$247,364	88.1	$33,427	$5,238	$1,967	$15,374
	8 mos.	407	1,233,882	232,371	1,915,962	282,468	470,508	84,901	1,128,598	2,085,789	108.9	—169,827	—399,851	—409,757	48,835
St. Louis-San Francisco	Aug.	4,884	3,147,706	288,389	3,716,757	615,409	952,013	111,336	1,441,590	3,286,839	88.4	429,918	96,274	121,303	372,263
	8 mos.	4,885	23,167,794	2,188,156	27,751,230	4,634,327	6,992,016	911,788	11,419,515	25,418,946	91.6	2,332,284	—346,135	—488,545	4,276,964
St. Louis, San Francisco & Texas	Aug.	266	155,939	679	163,612	23,936	16,953	7,499	59,449	114,689	70.1	48,923	40,509	12,794	12,441
	8 mos.	266	1,104,269	4,451	1,155,063	192,864	122,615	63,066	457,860	889,010	77.0	266,053	200,813	—45,592	—86,457
St. Louis Southwestern Lines	Aug.	1,706	1,382,748	29,401	1,477,451	241,557	257,207	81,365	492,488	1,149,471	77.8	327,980	220,669	114,954	302,892
	8 mos.	1,706	11,149,078	191,481	11,835,320	1,720,463	1,700,076	648,075	4,324,833	9,005,480	76.1	2,829,840	1,989,552	802,182	1,454,979
Seaboard Air Line	Aug.	4,318	2,191,476	270,054	2,745,218	505,340	666,019	148,195	1,176,462	2,652,151	96.6	93,067	—131,933	—115,372	23,993
	8 mos.	4,318	20,272,099	3,572,168	26,457,042	3,885,730	5,457,626	1,308,323	10,461,873	22,636,438	85.6	3,820,604	1,510,604	755,217	3,139,184
Southern Railway	Aug.	6,602	6,386,471	745,960	7,727,625	970,978	1,299,727	149,106	2,625,104	5,349,835	69.2	2,377,790	1,754,336	1,408,820	1,067,715
	8 mos.	6,607	45,760,344	5,784,671	56,199,026	7,328,829	10,233,096	1,218,703	21,121,150	42,367,678	75.3	13,831,348	8,825,933	6,039,846	11,501,338
Alabama Great Southern	Aug.	315	524,192	57,706	620,089	97,107	137,310	13,262	181,219	451,126	72.8	168,963	95,800	116,436	104,100
	8 mos.	315	3,490,778	414,457	4,205,513	693,981	1,045,738	97,984	1,367,076	3,386,649	80.5	818,864	395,925	690,988	858,562
Cincinnati, New Orleans & Texas Pacific	Aug.	337	1,102,128	80,233	1,254,733	169,522	258,317	27,110	311,228	813,730	64.9	441,003	297,790	347,612	361,347
	8 mos.	337	8,321,897	786,360	9,696,529	1,371,016	2,097,441	219,813	2,609,898	6,712,938	69.2	2,983,591	2,016,414	2,305,500	3,472,922
Georgia Southern & Florida	Aug.	398	121,155	22,061	158,288	33,291	38,295	1,706	69,768	148,251	93.7	10,037	—7,017	—6,430	12,506
	8 mos.	398	826,330	345,900	1,322,764	252,896	281,845	14,752	613,913	1,223,823	92.5	98,941	—38,125	—59,403	188,157
New Orleans & Northeastern	Aug.	204	234,298	27,046	277,422	38,336	35,881	6,605	77,788	170,891	61.6	106,531	75,599	49,311	35,565
	8 mos.	204	1,705,527	165,052	1,997,125	282,302	288,306	50,219	631,074	1,349,864	67.6	647,261	403,174	208,539	424,422
Northern Alabama	Aug.	100	37,745	1,298	41,466	10,609	1,245	781	13,937	28,463	68.6	13,003	7,307	276	7,789
	8 mos.	100	323,496	9,368	345,906	78,300	10,532	8,658	124,721	239,210	69.2	106,696	60,898	—24,487	84,169
Southern Pacific	Aug.	8,707	10,815,796	1,963,015	14,088,496	1,350,295	2,135,473	325,799	5,260,920	9,934,870	70.5	4,153,626	2,948,196	2,208,126	1,269,687
	8 mos.	8,714	72,890,426	14,688,171	96,569,329	11,667,644	17,481,924	2,767,076	39,956,055	78,296,583	81.1	18,272,746	8,644,247	3,017,567	12,446,153
Southern Pacific Steamship Lines	Aug.	....	542,562	34,830	597,237	14,552	88,973	17,509	401,424	538,011	90.1	59,226	43,752	43,514	—20,341
	8 mos.	....	3,985,724	206,275	4,390,318	112,085	770,015	139,406	3,167,673	4,321,505	98.4	68,813	—54,203	—55,942	33,127
Texas & New Orleans	Aug.	4,416	2,914,214	318,122	3,529,542	515,124	577,147	121,884	1,244,210	2,668,232	75.6	861,310	563,931	393,404	386,127
	8 mos.	4,418	22,652,891	2,274,503	27,199,202	4,174,302	4,973,645	977,639	10,003,523	21,856,336	80.4	5,342,866	2,886,664	1,333,355	3,198,468
Spokane, Portland & Seattle	Aug.	947	849,121	55,524	957,632	138,523	89,345	12,670	264,630	536,169	56.0	421,463	343,525	279,137	163,872
	8 mos.	947	4,536,690	335,197	5,242,860	901,054	705,205	84,952	1,964,246	3,891,996	74.2	1,350,864	759,426	414,375	1,142,878
Tennessee Central	Aug.	287	196,560	4,601	211,153	28,061	31,574	5,891	67,101	142,426	67.5	68,727	56,685	41,571	28,448
	8 mos.	287	1,289,100	34,470	1,398,861	237,344	213,033	47,805	525,877	1,104,435	79.0	294,426	199,353	79,483	216,792
Texas & Pacific	Aug.	1,937	1,730,337	207,220	2,108,065	199,985	393,220	70,513	696,295	1,482,245	70.3	625,820	477,637	363,797	405,609
	8 mos.	1,937	13,866,404	1,646,149	16,921,238	1,759,210	2,981,122	580,772	5,753,513	12,027,188	71.1	4,894,050	3,712,629	2,707,662	3,996,320
Texas Mexican	Aug.	162	56,489	368	68,456	10,913	12,304	2,739	34,295	66,332	96.9	2,124	—7,296	—10,478	26,297
	8 mos.	162	588,313	3,755	690,338	109,522	112,348	24,829	297,442	592,047	85.8	98,291	63,497	27,938	223,503
Toledo, Peoria & Western	Aug.	239	188,586	3	191,959	38,161	15,823	15,770	40,851	120,257	62.6	71,702	55,458	38,128	26,951
	8 mos.	239	1,386,370	24	1,408,042	346,799	104,992	130,532	330,472	998,605	70.9	409,437	299,091	181,225	183,082
Union Pacific System	Aug.	9,903	12,227,708	1,661,065	15,108,440	2,200,650	2,422,313	323,739	4,470,015	10,196,854	67.5	4,911,586	3,645,954	2,658,842	2,898,726
	8 mos.	9,909	70,892,798	11,063,750	90,289,694	10,046,295	16,528,338	2,772,079	31,750,531	66,700,019	73.9	23,589,675	13,664,141	8,396,184	9,986,003
Utah	Aug.	111	45,604	.....	45,673	10,292	18,211	400	11,649	43,981	96.3	1,692	—5,511	—4,618	1,015
	8 mos.	111	345,154	.....	345,949	79,679	135,741	2,536	109,600	357,316	103.3	—11,367	—66,162	—75,386	31,663
Virginian	Aug.	638	1,616,841	4,387	1,677,111	147,412	344,991	21,834	260,433	803,621	47.9	873,490	663,490	719,343	772,203
	8 mos.	626	11,667,209	27,885	12,122,171	1,153,838	2,795,340	180,360	2,025,393	6,374,395	52.6	5,747,776	4,242,776	4,688,679	5,952,664
Wabash	Aug.	2,434	2,916,336	182,240	3,322,171	431,034	593,758	145,851	1,351,021	2,684,766	80.8	637,405	443,842	66,113	40,689
	8 mos.	2,434	22,228,531	1,571,485	25,640,554	3,281,644	4,529,742	1,185,228	11,106,357	21,333,789	83.2	4,306,765	2,658,241	—174,166	3,060,721
Ann Arbor	Aug.	294	282,868	4,874	305,240	29,044	63,012	13,122	127,665	245,327	80.4	59,913	39,738	27,277	19,098
	8 mos.	294	2,117,556	24,626	2,221,234	224,513	500,997	104,275	1,029,157	1,957,857	88.1	263,377	104,053	—6,555	230,085
Western Maryland	Aug.	879	1,066,195	12,800	1,114,288	121,407	230,164	32,935	306,736	732,661	65.8	381,627	310,005	306,054	378,485
	8 mos.	879	8,203,398	73,735	8,579,007	1,025,800	1,966,333	292,083	2,510,829	6,106,999	71.2	2,472,008	1,884,037	1,927,025	3,274,467
Western Pacific	Aug.	1,208	1,363,485	45,614	1,437,781	293,814	214,385	62,466	555,837	1,180,876	82.1	256,905	165,712	62,082	—113,435
	8 mos.	1,208	8,091,751	238,987	8,579,542	2,674,136	1,836,476	467,753	3,930,146	9,312,862	108.5	—733,320	—1,452,912	—1,965,590	—953,650
Wheeling & Lake Erie	Aug.	513	1,019,448	25	1,082,331	107,809	211,042	33,728	348,424	728,789	67.3	353,542	223,755	263,829	386,120
	8 mos.	513	6,274,958	11,421	6,604,485	633,962	1,450,882	265,347	2,456,304	5,023,695	76.1	1,580,790	766,654	1,077,844	3,371,057

Keeping the *"Whip Hand"* over POWER

POWERFUL locomotives—ten of them—have been built to haul heavy tonnage freight trains over the severe mountain grades of the Denver and Rio Grande Western Railroad at high average speeds ... The "whip hand" for control of these trains is the Westinghouse No. 8-ET Brake Equipment. Its performance is positive, powerful, and flexible. Every detail device from compressor to coupling is designed to maintain functional integrity under severe operating conditions. » » » »

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